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PEDIATRICS

Vol. XXVIII JANUARY, 1916 No. 1

EDITORIAL

NON-SYPHILITIC TEETH

First, as to what is not syphilitic in dental pathology, let us note that the teeth of either the first or second set are related in their nutrition and permanence to the local condition of the mouth and the general status of the patient. Mercurial stomatitis, prolonged aphtous stomatitis, even simple uncleanliness in the care of the mouth (of babes and adults alike) will result in decay.

It is a familiar fact that prolonged and exhausting acute fevers are often followed by a rapid and general breakdown of the teeth. Some young married women seem particularly susceptible to the systemic drain of the first pregnancy, and before the baby has reached its ninth month of lactation the mother's teeth begin to look gashed and seamed, as though she were seventy instead of twenty-two. Upon these familiar facts one need not dwell. The dental erosions thus produced affect all the teeth equally, molars and incisors alike, and there is nothing characteristic in the cups, facets, or hollows that may result. In rickets the teeth are slow in appearing; they may also be ill-shapen and prone to early decay, but not in any peculiar way. Mercurial stomatitis in infants near the second dentition may modify the shape of the permanent teeth in various ways; some of these distorted and atrophied second teeth are occasionally mistaken for Hutchinson's teeth and once in a great while they may really be deceptive; but if we cling close to the description to follow there should not often be trouble.

TRUE DENTAL STIGMATA OF SYPHILIS

These become more easily understood when we remember that hereditary syphilis is a disease already present in utero, and that its malign influence is at hand, as a rule, during the entire developmental period of the unborn infant. This explains why teeth not appearing till the fifth year when perhaps the child has been for several years cured to all intents and purposes of the initial rashes, mucous patches, or what not, may yet show a fundamental defect.

In the order of their diagnostic importance we may mention these changes in the second teeth as follows:

1. Irregular decay—cupping or hollowing, or general "collapse." This may be suspicious but is too often seen elsewhere to be of great value.

2. Furrows (dents rays).. Certain of these may be cause for serious consideration; the "sulciform erosion" of Parrot belongs to this class.

3 Microdontism. This is emphasized by Fournier. He attributes greatest significance to the "dwarfism" of the incisors, and particularly of the two middle upper incisors. If these be "doll-teeth," the diagnosis of syphilis is nearly certain to be confirmed by signs of lues elsewhere. In the same class may be placed tuberosites and projections "Amorphism" of the teeth in the stricter sense (e.g., incisor for canine), and genuine monstrosities fall (though with less certainty of specific relation) under the same heading.

4 Atrophy of the crown. This may occur as far back as the first molar, giving the top of the tooth a shrunken and wrinkled look, comparable to a small tobacco pouch with the strings pulled tight. The same tooth in the region of the incisors is apt on first emergence to have a narrow, brittle, cutting edge, from which two or more fine spines project. The spines soon break, the cutting edge of the tooth decays somewhat more at the center than the margins, and we thus finally get the tapering tooth with concave "half-moon" cutting edge, which was first described by Johnathon Hutchinson and which, when occurring in the upper middle incisors is practically pathognomic of hereditary syphilic.

5. Chalk lines (sillons blancs). These are equally characteristic though far more rare. They are described by Fournier as "milky" or "chalky" in color, being in fact discolorations and not erosins. They should be found on the upper

front permanent teeth and are as permanent as the teeth themselves They are horizontal, symmetrical, about 1 m.m. in width, and occur about midway between the gum and the crown Their rarity detracts, unfortunately, from their semeiological value.

"SCHUMBURG'S METHOD OF PURIFICATION OF WATER FOR MILITARY PURPOSES

A paper of this title makes an interesting and useful part of a large volume of proceedings of the U. S. Association of Military Surgeons at their meeting in New York. The author is Capt. John H. Huddleston, Assistant Surgeon, N.G., N. Y., whose medical friends are probably more accustomed to see his name without its military appendages. Dr. Huddleston has made an exhaustive series of experiments upon water of various degrees of contamination, and fully confirms Schumburg's statements, namely that water of almost any reasonable degree of contamination with pathogenic bacteria can be made potable by the addition of comparatively small amounts of bromine. After the bromine has acted for a short time (we have no space for the details of the method), it is neutralized with a base (ammonia does very well), the resulting bromide not being present in large enough quantity to affect either the taste or hygienic qualities of the water. Resistent forms of non-pathogenic bacteria are not killed, but this would not detract seriously from the value of the process since diphtheria and typhoid germs would be those most dangerous and least apt to survive.

PEDIATRICS

ORIGINAL ARTICLES

PITUITARY EXTRACT (ANTERIOR LOBE) IN IDIOCY AND EPILEPSY; (CEREBROSPINAL MENINGITIS)*

BY IRVIN LINDENBERGER, M.D.,
Louisville, Kentucky.

About four weeks ago there was referred to me a female child two years old who had been treated for "general weakness" by a Louisville physician for some time. When I saw this child she presented all the evidences of idiocy.

Dr. W. A. Bolling not long ago called my attention to the use of extract of the anterior lobe of the pituitary gland in cases of this kind, and in talking with him about this child he advised that this method of treatment be tried. I accordingly gave the child two one half grains of the extract three times a day after meals for two weeks, then increased the dose to five grains three times daily. I saw the child yesterday, and while the mother said considerable improvement could be noted in its general physical condition, no change was observed in its mental attitude.

Dr. Bolling also mentioned the fact that some good results had been reported from the use of pituitary gland in epilspey. Two weeks ago I began the use of this remedy in the case of a boy aged about seventeen who has been having an attack of epilepsy approximately every three weeks for several years. This patient has been under the care of several Louisville practitioners at various times, and when he came under my observation was preparing to go to Cincinnati for further treatment. Of course it is too early to determine whether any benefit will be derived from administration of the pituitary gland in this case.

I merely mention these two cases to inquire whether the other members have tried pituitary gland in similar cases, and what their results have been.

Two weeks ago a boy of nineteen was brought to the Louisville Public Hospital. He was in a semi-conscious condition at the time. According to the history on Saturday morning he began complaining of pain in his head; he had worked the night previously, and retired about three o'clock in the morning. He had the most terrific nausea, and tried to vomit but was unable to do so. Late that afternoon (Saturday) he lapsed into a semi-conscious state and was brought into the hospital Sunday, I happened to be on the ward at the time, and was asked to give the patient chloroform. A sample of his spinal fluid was withdrawn by lumbar puncture, and examination failed to reveal any form of bacteria whatsoever. Spinal puncture was made daily for seven days with the idea of relieving any pressure that might be present, and several doses of antimeningitic serum were given. The last spinal puncture was made on Sunday, the boy having been in the hospital eight days and then advised that no further punctures be made, as pressure did not seem to be abnormal and the spinal fluid was clear.

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*Clinical Report before Soc. of Phys. and Surg. of Louisville, Ky.

Just what the etiologic factor was in this case I do not pretend to know. It impressed me as being a case of cerebrospinal meningitis, regardless of the fact that no organisms were found in the spinal fluid. The patient appears better today, he is able to eat, urination and defecation are being normally performed. When first seen he had bilateral divergent strabismus which has now disappeared.

I report the case principally from the fact that the etiology was obscure. The patient now has a well marked and characteristic erythema from the use of the antimeningitic serum.

DISCUSSION

Dr. L. P. Spear: I have used extract of the anterior lobe of the pituitary gland in one case of epilepsy with marked improvement. A man aged twenty-eight had suffered from epilepsy since the age of seven years. There was a history of his having received an injury to the head at that time. He stated that he fell and a nail was driven through his skull. There is prctically no evidence of a scar, and whether the nail penerated the skull I do not know. At any rate he has had epileptic attacks ever since. I have been giving him extract of the pituitary gland in five grain doses three times a day, and decided improvement has occurred. Previous to treatment he had been having from six to eight severe attacks each week, whereas but two attacks have occurred during the last six weeks.

I believe there is a great field for medication of this character in epilepsy and kindred disorders.

Dr. V Robins: With respect to the last case reported by Dr. Lindenberger: In many of the cases of cerebrospinal meningitis during the epidemic which occurred in Louisville a few years ago, repeated examination of the spinal fluid obtained by lumbar puncture revealed no micro-organisms. Doubtless we all believe that a micro-organism is the cause of cerebro-spinal meningitis, and it has always seemed to me there was probably greater localization of the organisms within the skull than the spinal cord which may account for the fact that they are sometimes not found in the spinal fluid.

It has been found that antimeningitic serum has no special curative effect in many of these cases, but the reduction of tension by spinal puncture is of considerable value. In the case reported, when there was no evidence of increased tension, of course there was no reason for making further spinal punctures.

THE CONSERVATION OF INFANT LIFE*

BY EDWARD A. AYERS, A.M., M.D.
New Jersey

President's Address Delivered at the Seventeenth Annual Meeting of the Tri-County Medical Society at Newton, N. J.
October 12, 1915

The presentation of infant life is of far greater economic value than the prolongation of adult life. The greatest waste in human life at the present time is in the period from impregnation to five years of age. The greatest needless waste is in this period, greater than in all others combined. Not fifty per cent. of initiated human lives traverse this deadly path to healthy childhood, yet over fifty per cent. of this loss could be prevented. Such a waste as this would bankrupt any animal breeding industry in the world.

The ways and means of checking this tremendous waste are immensely complex.

Its causes are equally complex. Classified we find them in such divisions as: Ulterior Heredity—the beginning of eugenics; Parental Heredity; Marital Sterility; Abortion and Premature Decay; Labor Anomalies and Infant Diseases; and the causes back of these classifications include hereditary and acquired diseases and general instability in parents and ancestors—most prominent of which is syphilis; artificial abortion and sterility; insufficient antepartum diagnosis; overwork of pregnant women and acquired occupational diseases—prominent in which is lead poisoning; unskillful care in confinement; alcoholism during pregnancy; insufficient or improper feeding, housing and general care of infants. And it becomes at once apparent that our ways and means of improvement are dependent on as many divisions of human applied conservation as there are causes for the evil. Thus, the eugenic division is largely a sociologic allotment; the essentially medical care during pregnancy, labor and infancy that of physicians; home conditions in the poorer classes, that of the Tenement House Commission; occupational diseases; a divided responsibility of physicians, health departments and labor commissions; injurious factory work of pregnant and young mothers that of labor commissions; pure milk in artificial feeding that of health departments and the health and hygiene of infant life that of any and all forces medical, sociologic and politic.

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*Journal of the Medical Society of New Jersey.

The wide scope of my topic, for thorough consideration, would result in filling an Eliot book shelf. This brief will only consider some points covering the period from impregnation to the first year of infant life.

During the first eight years of my obstetrical service at the N. Y. Polyclinic and the Mother's and Babies' Hospital, I personally attended poor women in confinement in their tenement homes, and for twenty years was in charge of many thousands of confinements, both in-door and out-door. I have witnessed the conditions of life of the pregnant women in homes and hospital; seen much of the care of women in labor by midwives, nurses, students and trained physicians, and endeavored to learn the lessons at hand and teach them to undergraduates and physicians.

I lerned, as others have learned, that the chief causes of pregnancy failures are syphilis,, alcoholism, artificial and spontaneans abortion, over work during pregnancy and occupational influences—such as lead poisoning. In the management of labor the chief causes of evil are first, ignorance of special or abnormal conditions until declared in labor—both by physicians, students and midwives; and second, incapacity to meet these abnormalities skillfully when discovered.

One of the most remarkable trends of public life in the present decade is the tremendous growth of interest in human health. The demand for economic efficiencies in the business world, pressed forward by insurance companies, corporations and labor organizations, is as much responsible for this great improvement—if not more so, as is purely academic interest founded in love of truth; and this public health interest is to prove a necessary factor in gathering conservation of infant life. The terrible waste of the best manhood of Europe in the present war is going to shortly compel a tremendous accentuation of this vital factor.

A recent paper by Dr. Julius Levy, Director of Child Hygiene in Newark, emphasizes the statistical demonstration that the highest infant and fetal death-rate in theState of New Jersey is not part and parcel of large cities and crowded conditions, but is found in those communities which relatively employ the largest ratio of women in manufacturing shops. I have observed in my former clinics that those pregnant women who did arduous work throughout their pregnancies—such as laundrying and floor scrubbing, gave a consequently higher rate of premature labors,, still-births and devitalized infants than those who had easier tasks.

The State cannot afford the assistance of pregnant women in labor employment to any extent that sacrifices healthful reproduction. It is as economically vicious as getting lumbear from a fruit-bearing tree. The correction of this evil lies within the scope of health and labor departments, supported by child-hygiene organizations and public opinion, and the last is dependent upon popular hygiene education. Short hours of toil and sufficient time after the child is born to give necessary maternal nourishment and care are the cultural necessities of this feature of infant life conservation, however they are to be secured.

Occupational dangers are likewise a potential cause of high rates of reproductive failures. Phillipsburg, whose leading industries are chemicals, Portland cement, pumps rock-drills, canisters, silk and horse shoes, has the second highest infant mortality rate in New Jersey, though having only a population of 14,123 in 1912. The community holding the State record is the progressive town of Roosevelt, with five thousand odd souls and an infant mortality of 53.25 per cent. of the total deaths. These people may be ardent advocates of large families, but at that they must mend their ways, or depend upon immigration to avoid extinction. Something more than a change of name is needed. Its principal industries are: Fertilizers, copper refining, steel and cigars.

Alcoholism, both as to parental and maternal influence, is exceedingly potential in debasing human reproduction. Particularly is this so with women who become intoxicated during pregnancy. The percentage of still-births, epilepsy, idiocy, defectiveness and criminality is enormously increased in consequence. Happily the trend of the times is lessening this source of evil.

It is the general opinion, even that of some who should be better informed, that the most important field in infant conservation is that of infant feeding, but the evils which I have just considered are far more potent.

One of the greatest evils opposing reproductive and infant conservation is—and I fear always will be—abortion. Dr. Levy estimates that over 11,00 abortions occur in Newark each year which is about one abortion to every four and a half confinements. This about agrees with the universal rate accepted by obstetrical authorities. A large part of these abortions are probably induced; and a very considerable part of spontaneous abortions, miscarriages and premature labors trace their origin to syphilis, mal-nutrition, overwork, occupational poisons and previous induced abortion.

As a general proposition we find that the poorer and uneducated classes show a larger birth rate than the well-to-do, but a larger infantile death-rate also; so that those who may cannot, and those who could will not, increase the population an unfortunate dilemma. It is my opinion that this class which seeks to avoid more than one or two children is growing—is encroaching upon the class that "let's nature take her course." Greater demands upon moderate incomes and increased love of luxuries are largely responsible for this extension.

A movement has recently been initiated in New York, with such independent thinkers as Dr. Abraham Jacobi and Charles Eliot supporting it, that favors larger legal latitude to physicians in granting relief to pregnant women, and I am in sympathy with this idea. But this feature is scarcely a drop in the bucket affecting the issue as a whole. Correction of this abortion evil, while partly dependent upon economic conditions, is largely a responsibility on our profession.

The one remaining phase of my topic which I present is the purely obstetrical division—the attainment of best results between impregnation and graduation of the infant in childhood. And first of all—the midwife. The midwife habit is an importation from Europe. Dr. Levy states that 52 per cnet of births in Newark are in care of midwives, and among the native born 25 per cent. Now the midwife does the best she can, but she can never do well enough; and I propose to show that she is not only an anachronism, but occupying a field that should be taken up for its own good and the good of the mothers—by the medical profession. Most of the "accidents" and bad results occurring in labor are the consequents of delayed knowledge of the pregnant women's conditions and insufficient obstetrical skill in the attendant, Every medical student should receive thorough bed-side instruction and practice in ante-partum, partum and post-partum work before he graduates. In this way,and in this way only, the doctor-to-be obtains efficient knowledge and skill to get the best results in his later practice.

To know of the existence of pelvic contractions, mal-positions impending eclampsia, placevia, maternal ill-health and what not, before labor supervenes, is to ward off most of the bad obstetrical results that would otherwise follow. Foreknowledge and skill will nullify 75 per cent. of abnormality evil.

In my New York obstetrical service I received every two weeks eight junior or senior undergraduates at the hospital, where they received daily individual training in diagnostic study and manipulation of pregnant patients; observed the indoor confinements conducted and described by the resident staff or myself, and attended the outdoor cases themselves, always having an experienced interne at call in case of difficulty. We endeavored to carefully examine all our patients previous to labor, and were thus informed in advance of abnormalities. This system is of immense advantage in properly educating our practitioners, and should be widely extended. A large city, like Newark, with no medical college, could and should develop the above system in connection with adjacent medical colleges. The midwife, being nurse as well as accoucheur, it will be necessary to develop an obstetrical nursing system ere the work of the midwife can be supplanted. The health authorities ofMontclair employ a follow-up system of department nurse where midwives are employed.

Once the child is born, its life insurance depends largely upon proper feeding, ventilation and house care. The well-to-do mothers show a larger per cent. of nursing incapacity—milk supply, than do the employed mothers; but the latter cannot go back to the mills and properly nurse their babies too. Does it not seem something in the nature of crime for the State to permit conditions that take mothers from the breast-support of their infants to such an extent that a large per cent. of these infants must die.

This murder—by neglect is going on all over the State of New Jersey.

Inasmuch as one third of all infant deaths during the first year occur within the first month, it is self-evident that prompt and intelligent attention by nurses, if not physicians, becomes essential to infant conservation. Aside from the direct losses of infants due to maternal employment during pregnancy and the nursing period, ignorance is responsible for possibly 80 to 90 per cent. of reproductive failure.

Summing up the issues involved in conservation of infant life, comes first the generalization, that education all along the line is the one great fundamental; beginning with sensible instruction of school girls; instruction of pregnant women applying at the dispensaries, and after confinement; training of undergraduates, physicians, nurses and midwives; and all accompanied with general public instruction through press, platform and magazine.

The better development and adjustment of our rules, regulations, sanitary codes and statutory laws must come from harmonious effort of many organizations. Our departments of health can apply the power of the State in insuring pure foods, water, sanitary conditions in sewage, and abatement of nuisances in all places affecting the public health.

Labor commissions can improve labor laws—through the legislature, affecting maternity. Tenement house commissions can better the living conditions. Cities, boroughs and counties can increase their budgets to the needs of wholesome reproduction and infant conservation.

Semi-public organizations and institutions can fill in the gaps that purely legal measures and bodies cannot handle.

And what of the cost and the returns? If this problem were handled with the efficiency of a Standard Oil organization, it would quickly result in the saving of from 3,000 to 4,000 first-year infants per annum in the State of New Jersey, and add from 30,000 to 60,000 citizens to our native-born population in twenty-one years.

ARTHRITIS AND ENDOCARDIS; REPORT OF A CASE*

BY B. F. ZIMMERMAN, M. D.,
Louisville, Kentucky.

On October 16th, 1915, I saw in consultation with Dr. Hartman. of Louisville, a boy aged eighteen years, clerk in a department store, who until within the last two or three years had enjoyed fairly good physical health. Early in June he applied to a local physician (not Dr. Hartman) for treatment, complaining that for some time he had felt "run-down", etc. He then gave the history that during the last two years he had suffered on several occasions from sore throat. From what he said it is presumed the attacks were tonsillitis. Examination of his throat, however, showed nothing characteristic. He was advised by the physician to go to the country for a month or so to recuperate. He remained in the country for ten days, losing about ten pounds in weight during the time, and as the country air did not prove beneficial he decided to return to the city. About that time he developed pain in the ankle joint which was diagnosed as rheumatism. There was some improvement after a few days treatment, and he worked for about a week. when the pain again became so severe in his feet and ankles that he could no longer perform his duties and was forced to resign. Shortly thereafter pain involved the other larger joints, the knees, wrists, elbows, etc.

When Dr. Hartman first saw this patient he complained of severe pain over the left kidney region. Urinalysis revealed the presence of considerable pus, some blood, and many colon bacilli. After a few days treatment with stock vaccine the laboratory report showed that the pus had practically disappeared from the urine; blood cells and colon bacilli still present. The patient was then having irregular chills and sweating with temperature ranging from 102 degrees to 104.5 degrees F. He later complained of pain in the right kidney region and also in the hypogastrium.

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*Clinical Report before Soc. of Phys. and Surg. of Louisville, Ky.

When first seen by me pain was elicited on percussion over both kidney regions, and the patient also complained of marked tenderness in front. Based upon the urinary findings and the clinical signs, it was thought that the recurrent chills and fever were probably due to involvement of the kidney. On baring the chest inspection showed an exaggerated heart action which caused distinct movement of the chest walls. Auscultation revealed a systolic murmur over the tricuspid area which was transmitted downward to the tip of the ensiform cartilage. There was a diastolic murmur at the aortic valve. Over the mitral area and to the left no murmur could be heard. The diagnosis was then made of ulcerative or malignant endocarditis, and blood examination showed streptococci in pure culture. The administration of autogenous vaccine was then suggested.

The source of the infection in this case, and also the so-called rheumatism in connection with cardiac involvement. are questions of considerable interest. Did the infection occur through the tonsil? There was apparently no tonsil infection at the time the joint trouble started. The patient now has a pure streptococcic infection, with joint pains and tenderness resembling ordinary rheumatism, and evidently an ulcerative or malignant endocarditis. The urine now contains no pus, but an occasional blood cell, and some colon bacilli, are still present. Neither ureter was catheterized, and neither kidney was palpable. The ankles, knees and wrists are still involved.

DISCUSSION

Dr. C. B. Spaulding: The infection in the case reported probably occurred through the tonsil or pharynx. Nearly all cases of acute arthritis have their origin in some extraneous focus of infection. Murphy, of Chicago, says it is more frequently from the pharynx than the tonsil, and that the streptococcus is the organism usually found.

A few months ago I reported to the Jefferson County Medical Association a similar case in a child of eight years with involvement of the right knee joint. Staphylococci were demonstrated by culture from the throat and also by aspiration of the knee joint. Several other joints later became involved, both kidneys were implicated, the urine contained pus, albumen and blood. The boy had edema of the right side; the scrotum and penis were swollen to three times their normal size; pus developed in the left radius and left fibula, the right knee joint contained pus and had to be opened and evacuated; the tibia had to be opened and scraped down to the ankle. The patient's pulse was rapid, the temperature was 103 degrees F., but there was apparently no acute involvement of the cardiac structure. Stock and autogenous vaccines were used, but the results were not as favorable as might be expected. However, the child finally recovered. Murphy states that autogenous vaccine is extremely useful in these cases, but stock vaccine does little good. This child rapidly improved after incision of the infected areas, and the kidney lesions disappeared. One knee joint was opened, the entire tibia was exposed, and later some of the other joints had to be opened. This child was in the hospital three times, one year the first time, six months the second time, and four months the third.

Dr. J. R. Peabody: Dr. Zimmerman's report is exceedingly interesting, particulary his remark that infection probably occurred through the tonsil. The history shows that the boy had several attacks of acute tonsillitis, but no acute throat lesion was noted immediately prior to development of the general infection. It must be remembered that infection of the general system need not necessarily be preceded by an acute attack of tonsillitis or pharyngitis. The focus of infection, may be more or less concealed within the tonsil, and thus escape notice during routine examination. Of course the infection in every case of acute arthritis does not come through the tonsil, but this must always be considered as a possible source. Much has recently been written upon this subject. Dr. Yager, of Louisville, read a paper before the Jefferson County Medical Association not long ago in which he stated that a blind abscess at the route of a tooth might be a responsible source of systemic infection, and should always be considered. He said there was no way of determining the outward appearance of the tooth, even when tenderness was elicited by touching it, whether or not there was a blind abscess, that the only way to demonstrate this was to have an x-ray picture taken.

Dr. I. Lederman: The question of greatest importance in cases of the character reported is just what is to be done Presuming that systemic infection has occurred through the tonsil, it is not safe to preume that infection is likely to occur. In other words, may there not be a reinfection at any time? Surgical removal of the tonsil may look like "locking the stable after the horse has been stolen," but in my opinion tonsillectomy would be advisable, provided the general condition of the patient will permit; not that systemic infection must necessarily have occurred through the tonsil , but with the idea that it is the most probable source.

Dr. H. Bronner: My remarks will be confined to the urological aspects of the case reported. In my opinion there must have been what is known as an hematogenous renal infection. During the last few years much experimental work has been performed in an effort to determine the source of renal infection, and we now believe that in the majority of instances it is hematogenous in character. It has been shown that such infections may be either severe or mild. Even in severe types the renal symptoms may be insignificant, the urine may contain no blood nor pus, the patient suffering from symptoms indicating a grave form of toxemia. In this type of cases the infection is usually coccal in character. When in New York recently I had the privilege of seeing two cases of so-called "hematogenous kidney" which were operated upon the same day, one following furunculosis, the other subsequent to an osteomyelitis. The pathology is represented by multiple abscesses in the renal cortex. The milder types of hematogenous infection are usually due to the colon bacillus. As a rule coccal infection is more virulent than that due to the colon bacillus, and in the latter class of non-surgical methods of treatment may be effective. Instead of extensive purulent foci there is found the large red kidney with so-calld multiple infarcts. Where surgery becomes necessary conservative methods, such as decapsulation and drainage will usually suffice. It has been demonstrated in many cases that persistent elevation of temperature following surgical operations (particularly in abdominal surgery) is really due to hematogenous renal infection, septic emboli being carried from the site of the operation. In the case reported by Dr. Zimmerman the original infective focus was probably in the tonsil.

The question as to the origin of renal infection furnishes an interesting theme for discussion, and our ideas concerning the subject have undergone material change during the last few years. It is now believed that in a large percentage of renal infections the infection is hematogenous in origin.

Dr. V. Robins: It is interesting to note that certain varieties of infection (streto and staphylococcus) are supposed to come from the blood, whereas another (colon bacillus) comes from the intestine. We know that the colon bacillus has its normal habitat within the testinal tract but it is not impossible that streptococcic infection may have also come from the intestine. Quite frequently the streptococcus is found in the intestinal tract, and if the colon bacillus can pass through the walls of the intestine and invade other tissues, there seems no good reason for presuming that other organisms may not do likewise.

Dr B. F. Zimmerman (closin): It has been my misfortune to have seen several cases of ulcerative or malignantendocarditis. They have all exhibited practically the same line of symptoms ,that is chills, fever, sweats, the typical jicture of sepsis. The prognosis is exceedingly grave, and in the majority of cases the patient promptly perishes.

It is unquestionable just how much benefit may be expected from the administration of either stock or autogenous vaccine where there is a true blood infection. My patient was given the first dose of autogenous vaccine yesterday. As a rule vaccine produces a rather pronounced reaction, but in this instance absolutely no reaction was noted. The patient seems worse today than yesterday, but there have previously been periods of amelioration and exacerbation. What the outcome will be no one can possibly foretell.

THE SUPERSTITION OF FLAT FOOT*

BY ROBERT W. LOVETT, M.D.

The term "flat foot" was originally the only one used to describe static disorders of the feet, and was almost universally applied to them twenty-five years ago. Then came the terms "pronated foot" and "weak foot," and there is now beginning to be used what is apparently the most correct name of all—"foot strain." The writer traverses the current view that under unfavorable conditions of weight-bearing the structure of the foot is so changed that the arch is lowered by the relaxation of ligaments and muscles and that pain results from this malposition. Flat foot of course exists, but should be restricted to feet which touch the ground where the arch should be, a matter which the most casual examination can detect. These feet may be rigid and resist correction, or in the non-weight-bearing position the arch may return to a certain extent, the former being rigid flat foot and the latter flexible flat foot. Flat feet, however, are not necessarily painful, often very serviceable.

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*The Medical Review, London.

The writer's views are based on examination of 800 nurses during the three years of their training at a large general hospital. Five or six were found to have perfectly flat feet, and yet had no trouble whatever during the whole period. These nurses worked in a day and night shift in badly ventilated wards, and foot trouble was extremely frequent.

The case that impressed the writer most occurred in a vigorous young woman with a foot theoretically so good that it was photographed as a type. But she developed so much pain and discomfort in three months' work that she was incapacitated for two months, and finally was compelled to leave the school on account of her feet. During her trouble there was no change in the position of the foot or its imprint, nor in any one of the 800 nurses studied was there any change found in the arch of the foot, that is, there was no evidence that these troubles were caused by a lowering of the arch. In every case the nurse stood for examination on a slab of plate glass with a mirror placed underneath at an angle to reflect the weight-bearing areas, which appeared as greenish-white patches. These areas were sketched, and the amount of pronation noted. Thus it was proved that no change in the arch relations occurred. There was in some of the cases, at the second examination, a shifting of the weight-bearing areas slightly inward, when painful symptoms arose. That is, the foot had rolled over a little on its inner side without change in the arch, but in many painful cases there was not even this change.

The conclusion was that the static troubles in the feet which developed among these 800 nurses, that would be ordinarily described as "flat foot," "pronated foot," "weak foot," etc., were not due to any particular type or structure of foot. The writer expected that the pronated foot and the foot with a low arch would prove less enduring under strain than the foot with a high arch, but the foot with a high arch, which touched the glass only at front and back and not on the outer border at all, slightly less enduring than any other form of foot—in other words, a high arch was more likely to give trouble than a low one. Careful examination did not enable the writer to predict which feet would be enduring under strain.

The conclusion, which has been wholly borne out by experience in private practice, is that the pain and disability cannot be attributed to the lowering of the arch, but to muscular strain, not necessarily attended by any perceptible change in the structure of the feet, and that the foot with a high arch is notably subject to foot strain. Probably the ligaments also become irritated by the failure of fatigued and overstrained muscles to reinforce them. Moreover, some degree of synovitis may arise in the tarsal joints, for instance in the astragalo-scaphoid joint, the under surface of which is frequently thick and tender.

As the shape of the foot could not be regarded as predisposing to trouble, and no lowering of the arch could be found to account for it, other factors were investigated. Sixty-four per cent. of the troubles developed in February to May, when the general condition was probably the poorest, and sixty per cent occurred in the first two or three months of the nurses' training. The onset was frequent after acute illness, such as influenza, tonsillitis, and more frequent during the periods than between them. Evidently these causes acted by weakening muscular power. This is, moreover, always unfavorably influenced by the boot because the foot as a weight-bearing structure is an exceedingly complicated mechanism, and instead of being left free to perform its function, like other joints, is encased from childhood in a restraining and distorting leather covering which weakens the muscles, as shown in the plantar muscles of the shoe wearer as contrasted with those of the savage. The boot is the most important contributing factor to foot strain, its shape never the shape of the normal foot. The back part is well enough, but the front always compresses the forefoot, narrowing and weakening the base of support. But the chief evil is the curve of the sole of the boot, for the following reasons:

In the nurses there were three types of foot seen in the pressure areas on the glass:

1. A flat foot in which the forefoot made a broad pressure area which tapered back gradually to the round of the heel, but little indentation showing under the arch.

2. A broad oval area in front connected by an isthmus along the outer border of the foot with the circular of the heel. This is the so-called "normal" imprint figured in the text books.

3. A form to be described as "two islands," in which appeared two areas not connected, one an oval in front for the forefoot, and a circular one behind for the heel. This form is clear when the imprint of the foot is observed through the glass plate, but is not so clear in smoked and wet tracings.

Now the shape and curve of the sole of the boot assume that all feet possess rather a low arch. Consequently many are wearing shoes which impede the muscular action of the foot, but do not afford a prop in the arch to compensate for it. In other words, the arch of the sole of the boot is often not so high as the arch of the foot. In most cases this does no harm, because the individual is vigorous enough to overcome the handicap; but it is a bid for foot strain in those less well equipped, and accounts for many, if not most, of the cases of so-called flat-foot, when there is no perceptible flat.

As to the influence of the heel the writer has never felt so clear about it as have many of his colleagues. It was originally devised to keep the back part of the foot out of the mud, but has been increased to a considerable height. But in many instances this height is conservative, and many a woman is made uncomfortable by her doctor's orders to put on low heels. The woman with a weak, deformed foot, the result of years of bad shoeing, has naturally a weak arch, which may not be able to support her weight without pain. But if she puts on a pointed shoe and high heels the toes are held by the front of the shoe and the foot slides up on itself, the strain thus being taken off the muscles supporting the arch, and the arch staying in place without muscular support by having its ends crowded towards each other.

But there is another function to the heel in the case of persons with short calf muscles, a condition described by Shaffer as non-deforming club foot, by Bradford and the writer as contracted foot, and by Hibbs as the muscle-bound foot. The foot cannot be passively dorsally flexed beyond a right angle, perhaps not so far as that. The condition is exceedingly common in a slight degree, and such patients as a rule are comfortable in low heels, because at every step the calf muscle is pulled on and when the muscle is short and reaches its limit of extensibility, the necessary strain in finishing the step must come on the sole of the foot. In cases of painful feet it is much more often necessary to raise the heel than to lower it.

But whatever the defects of the modern boot they have to be accepted as conditions under which we must treat patients. The public has been informed, but turns a deaf ear to reform. Only in children can much improvement in footwear be accomplished.

Treatment—Real flat foot, if painful, must be treated; if not painful it should be let alone. If to be treated, rigid flat foot is to be reduced under ether, or in extreme cases a wedge of bone must be taken out of the inner side of the arch. Painful flexible flat foot may be treated by supports.

The question, however, is the treatment of "flat foot," which should be termed "foot strain." I should attach little importance to whether or not the foot was pronated. But I should attempt most carefully to study the conditions which produced strain, with a view to relieving it, and I should be especially on the look-out for an unduly high arch. The shape of the sole of the boot should be compared with the curve of the sole of the foot, and it will often be found that the leather of the sole inside of the boot under the arch of the foot has never been defaced by the pressure of the foot.

Rest should be given to the overstrained muscles by supporting the foot principally at its inner side. This could be done by a boot with a sole of the curve to support the arch of the foot, but it is practically impossible to get such boots made; it is easier to modify a ready made boot. In the slighter cases, when an obviously bad boot has been worn, the trouble may possibly be remedied by good ready-made boots with as high an arch as may be obtainable. But more often it is necessary to raise the arch higher than this, which is readily done by splitting the leather forming the shank, removing the small piece of iron or stiffening which is present in most boots, and replacing it by a piece of steel with a higher and longer curve, which can be easily made. If the foot seems to be tipped too far in when the patient stands, that is, is too much pronated, especially if there are symptoms of strain at the inner side of the foot and ankle, the inner side of the heel may be made one-quarter inch thicker than the outer, thus changing the whole bearing of the foot more to its outer border. For temporary support, the well-known strapping by adhesive plaster is of use. In shoes with a stiff enough shank, pads of felt cut to fit the arch of the foot may be of use in some of the milder cases.

Of late it has become the fashion to decry the use of plates as producing muscular atrophy of the foot and doing great harm of an obscure nature. But the moderate and severe cases will in most instances be more quickly relieved by a proper fitting metal support than by any other means. The object is not, as conceived by some, to force the arch of the foot back into place, but simply to do what the boot does not do in supporting the strained and irritated arch. Plates of soft steel of graded sizes can be made to a neutral shape over the cast of normal feet, and by means of a monkey wrench and a round-headed hammer can be easily shaped to any foot by the surgeon. They have no flanges, and extend from the back of the heel behind to a point just behind the heads of the metatarsals in front. In width they are slightly narrower than the foot. When laid on the foot they should lie as smoothly as a layer of wet cloth. When they are put in the boots they should be comfortable, and if not they should be lowered until they are. Such strained feet as a rule are at least slightly swelled and thick in the arch, and as such swelling subsides, as it usually begins to do in two or three days, the plates may have to be raised slightly, after which they are tempered and nickel plated or covered with leather. They are worn as long as may be necessary. The great majority of patients sooner or later are able to do without them without a return of the symptoms, especially if they wear a boot which supports them better in the arch. If they have to wear them permanently, it is because the foot has been so damaged or is intrinsically so weak that is must be supported. Ill-fitting plates do harm by contusing the soft parts of the foot, and sometimes by holding it in an improper position.

Massage is of benefit. Attempts to discontinue the plate should gradually be made after a few weeks or months. If it fails, exercises should be prescribed, after which a further attempt should be made.

SOCIETY TRANSACTIONS

AMERICAN PEDIATRIC SOCIETY

Twenty-Seventh Annual Meeting

Lakewood, N. Y., May 24-26, 1915

Meningitis in the New-Born, with Report of a Case.—Dr. Charles Herrman, New York City: The infection may take place through the placental circulation, but this is probably rare. It may also occur, in cases of difficult labor, through premature respiration on the part of the infant, resulting in the swallowing, or aspiration of contaminated amniotic fluid. Infection may likewise take place at birth, through an injury to the skull; or after birth, through the eyes, ears, nose, gastro-intestinal tract, umbilicus or genitalia. From the fact that the bacterium coli is the most common causative agent in such cases, it seems probable that the infection takes place through contaminated water in the bathing tub.

DISCUSSION.—Dr. Sedgwick: I was very much interested in this paper, for one or two reasons. I believe, in the first place, that meningitis in the new-born is more common than the literature of this subject indicates. The cause for this is fundamental, and is one that this organization and others should consider. That is this: I have inquired, and have found no place in a teaching institution in this country where new-born babies are directly in charge of the pediatric division. There may be such an institution, but such an arrangement is not common. We have it at the University of Minnesota. As pediatrists all know, the new-born baby, when in charge of the obstetrician, is merely considered as a by-product. There is no routine physical examination made of the new-born babies, and my obstetricial friends in Minneapolis admit that these infants are simply left to the care of the nurse. In the hospital connected with the University of Minnesota, we make thorough and repeated examinations of the new-born infants, who are turned over to us immediately, and are not in charge of the Obstetric Department at all.

There are many interesting conditions found in these new-born babies. The reason that the condition discussed by Dr.

Herrman has not been more frequently reported is, I believe, because new-born babies have not been studied. We have had one case within the last month and a half in which we were able to show this process. The mother had an infective condition, a coryza; and the baby had a secondary infection of the throat and otitis media. Following these, there was a meningitis, the diplococcus being found in the meninges at autopsy.

I believe, therefore, that such conditions are far more common than has been supposed; and in this connection I should like to ask whether there are any other teaching institutions in which material of that character is given sufficient consideration, the proper attention being devoted to new-born infants. There is one such institution in Vienna, Austria.

Dr. Koplik: I have seen several cases of meningitis in the new-born. In one child, on the sixth day, I saw an attack of meningitis. This infant was subsequently seen by some of my colleagues. It had pyelitis from infection with the colon bacillus, and subsequently developed a colon meningitis. It recovered from that, and lived until eight months of age. It had an enormous hydrochephalus, and died.

The cases that we get in the hospital, up to the third month, we call "new-born"; and most of the cases of meningitis in the new-born are streptococcic meningitis. We had one case in a baby of six weeks sent in from the outside, in which the bacteriological finding was so peculiar as not to be understood. A bacillus similar to the typhoid bacillus was found, answering to all the reactions. It was discovered on lumbar puncture.

The reason that these cases have not been published is that we are waiting to make a collection of such cases before publishing them. Meningitis is not so uncommon in the new-born as is thought; but when a new-born baby shows symptoms of meningitis, the case is usually diagnosed as sepsis, and not meningitis.

Dr. LaFetra: I want to emphasize what Dr. Sedgwick and Dr. Koplik have just said. Meningitis in very young infants is more common than the literature would lead us to believe. In a paper that I read before our local society in New York, I reported a number of cases seen at Bellevue. One of the reasons that they have not been reported· aside from the fact that they are not under the care of the pediatrist, is that the symptoms of meningitis, as Dr. Herrman has said, are not evident, the symptoms manifested being those of great depression or sepsis. Cases of sepsis in young babies are not accompanied with high, but with low or normal temperatures. In some cases, they do not run over 99½ or 100 degrees. Another symptom commonly presented is marked cyanosis. The fontanelle is often not distended. The babies are overwhelmed by the sepsis, and the meningitis is a part of the sepsis.

Various germs are found. Sometimes it is the colon bacillus. We had a case similar to the one that Dr. Koplik mentioned resembling typhoid. We have to make lumbar puncture in cases of cyanosis, in order to find meningitis, on account of the possibility that we have to deal with hemorrhage into the meninges, which is often amenable to treatment.

Dr Herrman, closing: I believe that there are more cases of meningitis in the new-born than I have mentioned. I think that there would be twice as many found, if the literature were studied carefully. As Dr. Koplik has pointed out, there are probably many cases that are never reported.

With regard to the control of the new-born by pediatrists, I would say that this matter was brought up at a meeting of the National Society for the Prevention of Infant Mortality. It would not be possible in all cases to do that, however. Naturally, the obstetricians do not like to give up what they have to any extent; and that makes it difficult for the pediatrists to obtain control of the new-born.

With regard to what are called new-born infants, I would state that all the cases that I have mentioned were under three weeks. If infants up to the age of three months were included, the number of cases of meningitis would, of course, be very much greater.

A Case of Amaurotic Family Idiocy in One of Twins.—Dr. Charles Herrman, New York City: Alcohol and syphilis have been considered factors in the etiology of this disease, but it is difficult to see how any condition in the mother could affect only one of twins. These children received breast milk for only two weeks, and it could hardly be considered to be toxic for one child only. The theory of arrest of development must also be given up, because the brain of the amaurotic infant is normal morphologically at birth and for some time afterward. Then there gradually occurred a degeneration of all the ganglion cells and loss of function. The tendency to degeneration must be born with the child and develop subsequently. Some endogenous factor comes in and affects these children, although it does not one born without this weakness.

DISCUSSION.—Dr Koplik: It is surprising to see how many of these unfortunate children in the large cities go from clinic to clinic, without their parents being informed of their true condition; and I believe that the matter of the incorrect diagnosis is not to be taken too seriously, because physicians hesitate to tell the mothers what the trouble is and state that it is rickets. The ease with which the correct diagnosis can be made should be emphasized. If a man knows how to use the electric opthalmoscope, he can find out by looking through it and seeing the very much dilated pupil. If not familiar with the instrument, one can easily learn its use. The fact is that when a child that is drowsy, apathetic and limp is brought into the office, the first thing to do is to examine the fundus of the eye. The examination is easily made, and the diagnosis looks one right in the face.

Regarding the etiology, the Germans have pointed out the fact that there is scarcely an individual cell in these children that has not undergone vacuolization and degenerative change Therefore, the process seems to be a toxic one.

Dr. Hermann closing: Regarding the diagnosis, I would state that in the two cases in which the diagnosis of rickets was made, the doctor who made it admitted to me that he had made a mistake. He did not simply say it was rickets in order not to hurt the mother's feelings and make her unhappy. I think that in many cases the physician might know the cause of the trouble and not tell the mother, but he certainly would tell a medical man or someone else than the mother the seriousness of the child's condition. Therefore, I do not believe that all the mistakes in diagnosis can be explained in that way. I think, however, that very early cases are sometimes difficult to diagnose. The condition of the eyes cannot at first be so distinct that the diagnosis can be made readily by means of an examination of the fundus.

Everyone is agreed, I think, that the disease is congenital. We all think that there is something at the bottom of it that the child is born with. The difference of opinion is in regard to what takes place at the fifth month, the child having apparently been normal up to this time, and then showing abnormal symptoms.

No one questions the fact that the disease is congenital, but almost all think that it cannot be due to breast milk. One of these children was normal, and the other abnormal; and yet they had the same breast milk. That also makes it difficult to explain the disease on the toxic basis. The children were born under the same conditions, and progressed for five months as nearly in the same way as possible. They had the same environment and nourishment, and yet one developed this disease very severely and the other is absolutely normal.

General Tuberculosis, Including the Skin, in a Child.—Dr. William P. Northrup, New York City: Tileston says that all the eruptions he has seen in such cases have been in fatal cases, and Lamb found that they were always in the form of a vesicle The condition seems to be a breaking down of the tissues wherever the bacilli are lodged, with a subsequent drying of the vesicle, leaving a little pit. This is only the fourth case of the kind that I have seen. It would seem as though someone here might have had a case like this. In all my experience at the Foundling Hospital, however, I never saw one; but the cases have all come in nearly together at the Presbyterian Hospital.

MacEwen's Sign—An Analysis of the Anatomical Conditions which enter into the production of this Sign, and the value of its presence in diagnosticating changes in Intracranial Pressure.—Dr. Herbert B. Wilcox, New York City: The skulls of children of various ages and development have percussion notes peculiar to the state of the cranium. It is possible to establish a note normal to the various types of crania found in infants and children. A positive MacEwen's sign exists when variation from the normal note is found. It consists in a relative change, rather than in a definite condition common to all diseased crania. The sign is better elicited by the stethoscope than by the unaided ear. Increased clearness of sound when percussion is made over the posterior portion of the skull, rather than near the stethoscope, is diagnostic. The sign uniformly accompanies conditions of increased intracranial tension, and is not found unless the causative factor exists. It is equally applicable to infants and to older children. It was found to vary directly with the development and recession of cerebral symptoms as complications of cases not directly affecting the central nervous system. It was invariably found absent in children normal as to the brain and its covering.

Dr. LaFetra: I want to congratulate Dr. Wilcox on his persistency in working at this sign, which for many years I have thought to be of practically no value to us. I first became acquainted with MacEwen's sign a number of years ago, when I was interested, with one of the attending surgeons in the New York Hospital, in brain cases. When I came to deal with children, it seemed to me that various types of skulls, especially those with open fontanels and soft bones, made its occurrence valueless. I am glad that Dr. Wilcox has taught me about this sign and shown me that it is of value, although it requires careful attention to the points that he has brought out to make one able to distinguish between a pseudo- and a real MacEwen's sign. I did not know about one important feature that Dr. Wilcox emphasizes; and that is that if the stethoscope be placed on the forehead and percussion is done on the side of the head below the parietal bone, the sound in true MacEwan's sign will be louder and higher pitched the farther away the stethoscope is from the point of the percussing finger. As one goes forward toward the stethoscope in percussing, the sign becomes less loud and lower in pitch. To me, the pitch is of more value than the loudness. Quite contrary is this to the sign which is the false MacEwan's sign, in which the pitch of the note becomes higher as one approaches the point where the stethoscope is.

I hope that Dr. Wilcox will continue this work, as I think it will be of value in helping us to determine when to draw off spinal fluid in cases that are not meningitis but meningimus or other types of spinal irritation with increased amounts of spinal fluid.

Dr. Koplik: My attention was first called to the sign by a doctor of St. Louis, when he was an interne and an assistant in my ward. He had been reading MacEwen's book, and asked me whether I had seen the sign. From then on, we began to work it up. I do not find that we can improve on MacEwen's old method, to percuss at the juncture of the temporal and parietal bones on the under side of the head when it is held to one side. I think that this is the most useful sign that we have in beginning tubercular meningitis, ordinary meningitis, and serous meningitis due to otitis media. As is the case with every other sign, however, a great deal depends on the skill of the individual who applies it. Some men cannot hear the sound well enough to make any distinction between the sound one gets over the skull in meningitis and that obtained in a normal skull. Such a man naturally thinks that the sign is of no value. Therefore, it is a matter of individual application.

We find the greatest difficulty in applying the sign in the cases of those children who have had rickets and, at the age of say, four years, have had a little hydrocephalus. Later, when they develop a condition for whose diagnosis we wish to use this sign, it is very difficult to tell how much of the resulting sound is due to the old rickets, and how much to the new disease. That is the only difficulty that I have found. The older the child, and the more ossified and older the skull, the more valuable is the sign. In very young babies, whose fontanels are open, the value of the sign is rather in a palpatory way. If you put your hand on the opposite side of the head and percuss for MacEwen's sign, you can feel a wave on the opposite side of the skull. In that way, the method is exceedingly valuable in the cases of young babies, as a sign of increased fluid in the head.

A Preliminary Report on the Pneumonias in Children, with Special Reference to its Epidemiology.—By Drs. Godfrey R. Pisek and M. C. Pease, New York City.

Dr. Godfrey R. Pisek, New York City: From a study of a thousand cases, we have established a mortality-rate for pneumonia of 34.3 per cent. This is probably higher than that in private practice, but is the average for the mass of city dwellers. Bronchopneumonia is pre-eminently a disease of the first two years of life, and is relatively uncommon after the third year. Lobar pneumonia is the type present after that period. Omitting those cases which are frankly secondary to some other condition or occur as a terminal infection, the infection which is the etiological factor of lobar pneumonia is always the pneumococcus; while bronchopneumonia may be due to a number of organisms. If pneumococci are present in bronchopneumonia, they are usually one of a group of organisms, or are of low virulence. The pneumococci may be divided into four groups, each made up of races that are closely related. The pneumonia should be treated with a serum or vaccine derived from organisms belonging to the group causing the infection or the therapy will be useless.

DISCUSSION.—Dr. Graham: If I understood Dr. Pisek's figures correctly, he said that 41 per cent of these cases of lobar pneumonia developed empyema. It has been my experience that the percentage of empyemas that one meets with in pneumonia varies very much from year to year. You may go for several years and see only a few cases; and perhaps during the following year a large proportion of the cases will develop empyema.

With regard to the mortality of empyema cases, if I caught the figures correctly, Dr. Pisek said that the mortality in these cases was 63 per cent. That certainly differs very radically from my experience of empyema in lobar pneumonia. I think that it makes a great deal of difference whether you take the cases from hospital, or from private practice. Personally, I have always considered that the child in private practice who had an empyema following lobar pneumonia would, in the large majority of cases, recover. In hospital practice, I am quite sure that I have a very much larger percentage of recoveries than 63. I have not kept an accurate record, but I feel convinced that in hospital practice, whether it is in a child under five years of age, in whose case we commonly do not resect the rib, or in one over that age, in whose case it is the common practice to resect the rib, our mortality is nothing like 63 per cent. Whether this is merely our experience or the common experience of pediatrists, it is yours to decide.

Dr. Sedgwick: There is one point that Dr. Pisek mentioned that should be emphasized especially in conditions in our part of the country. The mortality is quite different in Minneapolis in this regard. This fact was impressed on my mind particularly in adult practice. I went from a large hospital in Chicago, where the mortality was high, to practice in northern Minnesota, among adults and children, and found that they had a record there of 125 cases of lobar pneumonia without a single death. I was skeptical about this death-rate at first, but later learned from my own experience that it was correct I had thirty-five cases in adults, with a mortality of one, a very old man. At Minneapolis, in hospital, as well as in private practice, the mortality of lobar pneumonia in infants and young children is almost nothing—very low. I think that there is a difference in the results at different places, as Dr. Graham says. The mortality-rate given by Dr. Pease represents large city records. In those of about twenty-five thousand inhabitants, the conditions are not the same. In Minneapolis, the mortality is much lower than in New York or Chicago; whether this is due to good housing or what, I do not know.

Dr. Blackader: A high mortality in lobar pneumonia does not represent the experience that we have in Montreal.

Dr. Pisek, closing: What Dr. Graham says would be borne out by the fact that a great number of our patients are young children. In an institution of this sort, it is the critical cases that are sent in. The children that are doing well in private practice are kept at home. We often get the cases on the sixth or seventh day, because they are doing badly. If we were to analyze our cases by age, we should find that the empyema cases that come in are from the first to the eighteenth month. A great deal depends on the activity of the surgeon. If he is conservative, the young children have a better chance to live than when he is less conservative. I believe that what I have to say will answer Dr. Sedgwick's criticism. In outlying districts and where the children are in better circumstances, they stand the condition better. These are the facts and we stand by them. We feel that we have done all that we knew how to do; and if we have not done as well, we want to be criticised. These are children that come into the hospital from city practice; and if mortality statistics were taken elsewhere, I think that it would be found that these are not very far off from the average.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE

Orthopedic Surgery

Under the Charge of

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Late Results of Excision of the Transverse Process of the Fifth Lumbar Vertebra. By Fred. J. Fasset, Jour. A. M. A., Nov. 20, 1915.

The author reports three cases in which he excised a transverse process of the fifth lumbar for lumbar or sciatic pain. All secured relief from their symptoms by operation after all other means of cure had been faithfully tried.

The difficulty and danger of this operation are great enough to cause it to be the method of last resort. The chief danger is that of injury to the great nerve trunks and particularly of the nerve fibres which go to the anterior tibial nerve.

Orthopedic Treatment during Improvement after Infantile Paralysis.—Dr. H. Winnett Orr, of Lincoln, Neb., stated before the Mississippi Valley Medical Association that the paralysis of infantile paralysis was due to partial or complete destruction of the motor cells and peripheral nerves. This paralysis, so far as the nerve supply of any muscle or set of muscles was concerned, was usually temporary. This was for two reasons, first because the motor cells for any muscle or muscle group lay at different levels of the cord and were rarely all involved, and, second, because many of those actually involved recovered. Permanent paralysis of any set of muscles was usually due to the fact that such muscles had been permitted to be overstretched by the contraction of unparalyzed opponents or by weight bearing without protection, to such an extent that they would not respond to stimuli when the nerve elements regenerated. Mechanical protection of the muscles in the affected area against overstretching was the factor of first importance in treatment following the acute attack. He concluded, therefore: 1. It was a serious fault to use electricity, exercises, or massage, or in fact almost any other treatment than careful splinting during the inflammatory or painful stage of infantile paralysis. 2. No treatment following the acute attack was complete nor adequate unless it was accompanied by splints or apparatus fully to protect and relax the muscles involved. 3. It was a serious mistake to put a patient on his feet during the first year after the acute attack unless he was fully protected by splints or apparatus against deformity on account of paralyzed muscles or muscle groups. 4. The problem of getting the maximum of recovery during the first year after infantile paralysis was about fifty per cent spontaneous improvement and somewhere between twenty-five and fifty per cent more splinting and apparatus. 5. Finally, orthopedic writers had not succeeded in conveying to the profession at large satisfactory information as to the proper relationship of the different therapeutic agencies appropriate after infantile paralysis.

The Pathology of Chondrodystrophia Fetalis with Report of Two Cases.—By Robt. Goodman. The Medical Council, Sept., 1915.

Three forms of this disease are recognized: The hypoplastic, with sponginess of the bone and irregularity of the epiphyses of the long bones, the hyperplastic, with abnormal enlargement of the epiphyses, and the malacia form, with softening of the epiphyseal cartilage.

The pathological process is present in utero and terminates before the birth of the child. The periosteum is thickened, the bone of the shaft is compact, the osteoblasts are arranged very irregularly, the epiphyseal lines are very vague, the cartilage cells ossify early and interfere with the development of the growing bone. Consequently the body of the child is long and the extremities abnormally short.

The X-ray showed the presence of twelve fractures, most of them ununited. Union occurred after the extremities were dressed in splints.

The second case was brought to the hospital because of bowed legs, back, and wrists, with which she was born.

The Relation of Landry's Paralysis to Poliomyelitis.—By M. Neustaedter, Medical Record, 1905, lxxxvii, pp. 436-7.

Neustaedter says Landry's paralysis may follow diphtheria, pneumonia, typhoid, variola, anthrax, influenza. The point of entrance of the germ is not known nor its manner of dissemination. Thus the disease is a clinical entity with varying pathological changes. These may be primarily in the peripheral nerves and confined to them or they may be myelitic only and again neurocellular. In poliomyelitis we have, he says, a uniform etiology, the nasopharynx is the point of entrance and the pathological changes are uniform in every case. It matters not what part of the central nervous system is affected. We have, then, in poliomyelitis a pathological entity with varying symptom complexes. There may be flaccid paralysis with muscle atrophy or spastic paralysis or cranial nerve involvement, also ataxias and tremors, or mixed types.—M. H. Henderson, Rochester, Minn.

Lymphoid Marrow and Tuberculosis: an Experimental Study.—By Leonard W. Ely, Jour. A. M. A., Nov. 27, 1915.

The author injected into the marrow cavity of the tibiae of rabbits a few drops of a suspension of living bovine tubercle bacilli in normal salt solution. After varying periods of time the animals were killed and examined. All animals killed after an interval of 15 days from the day of operation showed distinct tuberculosis of the bone marrow. The use of guinea pigs gave similar results with human tubercle bacilli.

Ely concludes that the lymphoid marrow of rabbits is a good field for the growth of bovine tubercle bacilli and that of guinea pigs for human bacilli. Furthermore, he sums up the evidence in support of his theory that the location of tuberculosis in bone is determined by the presence of red, or lymphoid, marrow, by stating:

1. Tuberculosis is found only in those bones or regions of bones where red marrow is present.
2. Marrow tuberculosis is more common in children, whose bones contain more red marrow than the bones of adults.
3. After resection in adults, if secondary infection be avoided, the disease disappears. The best authority available says that after resections lymphoid marrow disappears.
4. Experiments demonstrate that lymphoid marrow is an excellent field for the growth of tuberculosis.

Infant Feeding in Health and Disease

Under the Charge of

ALFRED C. WALLIN, M. D.

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"Solac," a Milk Similar (London Lancet) There has recently been placed upon the market a fluid food which may be said to bear the same relation to cow's milk that margarine does to butter Chemically it is indistinguishable from cow's milk, and physically it shows very close relations. It is, at all events, a perfect emulsion containing fat, proteins, sugars, and mineral salts. Cow's milk is simularly a perfect emulsion, containing the same proximate diatetic principles. This artificial milk, or "Solac" as it has been called, further shows such a close resemblance to caw's milk that cheese has been made from it, and yetit is entirely free from products of animal origin. Its proteins, fats, sugars, and mineral salts are drawn exclusively from vegetable sources. In The Lancet of Oct. 19th, 1912, we announced the production of what was then called "synthetic milk," and an opportunity occurred to our consulting chemist of examining this product. The substance, he reported, "looks very like milk and has a round sweet fatty flavor not unlike that of rich milk."

"Solac" is this "synthetic milk," which, since it was first produced, has had the benefit of modifications due to experience, and we have now the production on a large scale of a fluid less distinguishable from cow's milk than ever before. The process is being carried out at the Solac Company's premises, 221 Tottingham Court-road, London, W., and our consulting chemist, who has witnessed it, reports that everything is carried out with scientific cleanliness. It must be borne in mind, however, that though we may obtain this close similarity from the chemical and physical standpoints, the ultimate test must be a physiological one. There are physiologcial qualities of cow's milk which cannot be referred to proteins, fat, sugar, and salts, and it is well known that the presence of enzymes or ferments or of vitamines is of first dietetic importance, the main difference between raw milk and boiled milk having been traced to the destruction of these bodies in the latter by heat. But by introducing a lactic culture of a selective strain at a certain stage of its production the necessary biological activity is given to this artificial milk. We have examined a good many samples of this "vegetable milk" and have found that the non-fatty solids range from 8.96 per cent (consisting of proteins, dextrin, and sugars), to 9.5 per cent, while the fat ranges from 3.69 to 3.9 per cent. The proteins consist chiefly of globulin, known as glycinin, which is a very rapidly digestible "vegetable casein"; the fats are of vegetable origin, showing the same melting point and ease of hydrolysis as ordinary milk-fat; while the sugars and dextrins present are both again known to be of ready assimilability. The above figures are identical with those given by pure rich cow's milk.

The working basis of "Solac" or vegetable milk is the soya bean, which is particularly rich in oil and protein, the latter of an easily digestible type. The beans are very rigorously cleansed prior to the beginning of the extraction and emulsifying processes. A residue of bean cake is left which possesses high nutritive properties, and this has already been used for making a bread, where its nourishing properties appear to be enhanced. The cake contains from 10 to 11 per cent of oil and 20 to 24 per cent of protein.

This novel invention is of some importance, especially at the present juncture, when the methods of practicing food economies are uppermost in all minds. If it proved that this vegetable milk can in the majority of purposes effectively replace cow's milk, the "similar" will naturally claim considerable attention for many reasons. To begin with, such a milk at once disarms all suspicion as to contamination with dirt and disease organisms. It is made under conditions which clearly have nothing in common with milking the cow and the risks of infection which that process entails. It is cheap and can be produced at will, so long as the supplies of raw material do not fail, which is highly improbable. The supply, therefore, whatever the demand, can always be maintained. There is no reason why it should not possess the same nutritive properties of cow's milk itself, having regard to the scientific method of production. Further, there is the suggestion that in the dried form this vegetable milk may be preserved for all time, and be available to produce again, by mere mixing with water, a fluid which to all intents and purposes fulfills most of the requirements of cow's milk. The adoption of margarine as a substitute for butter has been definitely justified by physiological experiment and the evidence of practical experience. With possibly a few more limitations the use of an imitation milk such as "solac," the preparation of which is controlled by scientific authorities, may conceivably receive a similar endorsement, and a new and important economic source of food-supply be made available for the public need. It has already been used with success by the baking and confectionery trades.—The Lancet.

Hunger in Infants.—H. Ginsburg, I. Tumpowsky and A. J. Carlson, Chicago (Journal A. M. A., May 29, 1915), notice the difference in the view of pediatrists as to the incidence of hunger in infants, and give their conclusions, derived from the balloon tests as to the question. The experimental procedure has been previously recorded. The observations were taken on thirty normal infants. It is now established, they say, that the subjective sensation of hunger is caused by a certain type of contraction of the fundal end of the empty stomach stimulating sensatory nerves in its walls. They find that the infant stomach shows feeble tonus contractions of the fundal end one hour after nursing, and as it discharges its contents, these gradually increase in frequency and intensity until from the end of two and one-half to three hours, they become transformed into vigorous hunger contractions. In their series, the minimum was two hours, and the maximum three hours. The hunger contractions of the empty stomach are modified tonus waves of the fundus, as shown by Rogers and Hart. In the normal case, their presence is probably evidence that the stomach is in proper condition to receive food, and the normal interval between feedings is two and one-half to three hours.

Whole Milk in Artificial Feeding of Infants.—Vining (The Practitioner, 1915, xcv, 589) makes a plea for the more frequent use of whole milk in artificial infant feeding and claims that the frequency of rickets is partly due to wrong methods of feeding, especially dilution in modified forms of feeding in all cases where the natural supply is not available. In discussing the usual objections to whole milk feeding the author claims that the difficulty in using whole milk lies in the mechanical factor of clot formation and that the use of heat (110 degrees) or the addition of sodium citrate prevents clot formation and makes this form of feeding successful. The addition of sodium citrate has no effect of drugging as cow's milk normally contains sodium chloride and citric acid. The constipation met with in whole-milk feeding is not due to the sodium citrate, as the same condition occurs in breast-fed infants. As to dried milk, the author claims that fresh milk may be sterilized by heating and if there is any risk of scurvy in either it would seem to lie in the use of dried milk. The dried milks, however, are superior to the proprietary foods. Babies can be fed successfully on whole milk containing sodium citrate from one to two grains to the ounce at any time after the first month. As to the amount to be used the best method is to allow the baby to indicate the amount it requires, the amount varying naturally at different feedings, and to check this by observing the condition of the stools, the amount of sleep, its weight and physical development. Constipation must be avoided and liquid paraffin or equal parts of the confections of sulphur and senna are recommended.

Infectious Diseases.

Under the Charge of

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Practical Value of the Guineapig Test for the Virulence of Diphtheria Bacilli, was the title of a paper by Dr. John A. Kolmer, Dr. Samuel S. Woody, and Dr. Emily L. Moshage, of Philadelphia, read before the Philadelphia Pediatric Society (Medical Record), in which the necessity in the practical management of diphtheria and healthy carriers of diphtheria bacilli, for some method of determining the possible harmfulness of diphtheria bacilli was emphasized. The animal virulence test had been found in their hands the only test for determining the virulence of diphtheria bacilli. Differentiation among diphtheria bacilli by morphological and biological characteristics was not reliable. Experimental data had shown quite conclusively that a nonvirulent culture of diphtheria bacilli could not be made virulent; however, a culture that had lost its virulence to a large extent might be made again virulent by animal passage of by transference from throat to throat among persons. Therefore, they wished to emphasize the necessity of conducting virulence tests in such a manner as to detect the potential harmfulness of cultures of a low degree of virulence. In addition to that prime requisite, the test should be conducted in an economical manner and yield its results as quickly as possible.

Doctor Kolmar and Doctor Moshage had experimented during the past year with various methods of determining in a practical way the virulence of diphtheria bacilli. They found that the subcutaneous injection into 250 to 300 gram guineapigs of four c. c. of a twenty-four hour Loffler culture washed off with ten c. c. of sterile salt solution, yielded best results; the subcutaneous injection of seventy-two hour serum dextrose bouillon cultures likewise yielded good results. The intracutaneous test they found less serviceable for detecting the pathogenicity of cultures with low virulence, and pathogenicity of cultures were more difficult to read.

With the subcutaneous method they conducted 1,054 virulence tests in the Philadelphia Hospital for Contagious Diseases. Cultures of the granular or beaded and barred types of diphtheria bacilli from the throat, nose, and ear yielded about seventy-two per cent of positive results; cultures of the long solid types were virulent in about forty-two per cent of cases; cultures of the short solid types yielded uniformly negative results. In practical work they regarded the granular and barred types of bacilli as dangerous, no matter how long they persisted on a mucous membrane after recovery from diphtheria. Of all types they were most likely to remain virulent and should be so regarded until proved otherwise. The animal inoculation test was of particular value in dealing with cultures of the solid types. Doctor Kolmer for several years had disregarded the short solid types in cultures when he was sure that the bacilli belonged to this variety. In the Philadelphia Hospital for Contagious Diseases virulence tests with organisms of this type had been uniformly negative in such a large number of cases that they regarded this bacilli as practically harmless. They were of the opinion that in many instances the bacilli found on a mucous membrane after recovery from diphtheria were present before the attack, and were likely to remain for an indefinite time afterward, yielding a line of positive cultures which would require quarantining over a long period of time, unless the culture was submitted to the virulence test. If the physician took cultures carefully, conscientiously, and freely, especially several cultures before excluding the diagnosis of diphtheria in a given case, and if three consecutive negative cultures were required instead of two before quarantine was lifted, combined with the efforts of the bacteriologist to differentiate between virulent and nonvirulent bacilli with the judicious use of the animal inoculation test in suitable cases, they believed that the bacteriological diagnosis and management of diphtheria would be efficient and satisfactory to all.

Antitoxin in Diphtheria.—S. S. Woody, Philadelphia (Journal A. M. A.) says that he is entirely satisfied that diphtheria antitoxin as generally used is given in doses far too small. The object we have in view is the rapid and complete neutralization of the diphtheria toxins by a single large dose of the antitoxin, if possible. This cures the patient rapidly, minimizes complications and the infectious period is shortened. The localization of the disease process and its extent, the virulence of the infection and the patient's general condition should, of course, be considered, but he thinks that no case, however mild, should receive less than 10,000 units, and when both tonsils are well covered with exudate and the palate, uvula and nose involved, and the disease of three days' duration or more, he would give 150,000 to 300,000 units; in laryngeal cases from 30,000 to 45,000 units and a corresponding increase of dosage when combined with other varieties. A practical advantage is the avoidance of the discomfort and pain of frequent doses. He holds that large doses are not more harmful than small ones, as less serum is administered and the possibility of anaphylactic shock is so distant that it should not influence us in the least. He doubts whether we have as yet used diphtheria antitoxin in doses that give its full therapeutic efficiency. The results in the author's cases are reported for the various years from 1908 to 1912, showing a marked decrease in the mortality with the increased doses.

Milk Borne Septic Sore Throat.—By Herman N. Biggs (Medical Record, Dec. 4, 1915). Septic sore throat frequently occurs in epidemics, and is caused usually by streptococci which can be traced to infected cows on dairy farms. The symptoms are uniform and characteristic, with a rapid onset often with a chill, and a sudden rise in temperature to 103 degrees or 105 degrees F. Headache is severe and general muscular pain is present. The throat may show only general redness like scarlet fever throat; later, however, small patches of membrane may appear on the tonsils and in many cases the exudate resembles diphtheria. The cervical lymph glands are almost always much swollen. The first period of the disease lasts for four or five days, resulting in rapid recovery in mild cases and marked by secondary complications in severe cases. Common complications are peritonsillar abscess and suppuration of the cervical glands. Diffuse cellulitis of the neck is common, as are also polyarthritis, erysipelas, nephritis, pneumonia, pleurisy, pericarditis, septicemia, and peritonitis. The only means of prevention lies in universal pasteurization of milk used for drinking purposes.

Miscellaneous Extracts

Congenital Syphilis in Infants.—M. Soldin and F. Lesser (Deutsch. med. Wchnschr., 1915, xli, 429) present the symptom-complex of a number of cases which have merely a suggestion of syphilitic disease and in which the Wasserman reaction was uniformly negative. The infants suffered primarily from nutritional disorders. Symptoms which suggested congenital syphilis in these cases were sniffling, discrete rose-colored macules on the soles of the feet showing no infiltration, post-cervical lymphatic enlargement only as large as rice kernels and occasionally a slight and temporary enlargement of the liver and spleen. In every one of these cases the mother was found to have a positive Wasserman reaction and so turned a suspicion of the disease due to a faint symptom, to a conviction of the presence of a luetic taint. Toxic substances may have been transmitted to the child from its syphilitic mother sufficient to account for the suggestive symptom and yet the question may arise if the child be actually a spirochete carrier. Again all syphilitic symptoms of an active kind can be absent for many years and then suddenly develop. Systematic observation in families afflicted with congenital syphilis show that in one-half the cases congenital syphilis is latent during the early years. For practical purposes the authors lay down the rule, not to be content with a negative Wasserman reaction in an infant with suggestive luetic signs, but to also examine the blood of its mother.

Treatment of Ophthalmia Neonatorum.—G. A. Neuffer, in the Journal of the South Carolina Medical Association for February, 1915, states that he has met with universal success in this condition by means of the following treatment: A sixty grain (4 gram) to the ounce (30 c. c.) solution of silver nitrate is at once applied to the conjunctiva and immediately precipitated with a solution of sodium chloride made by dissolving one teaspoonful of the salt in a glassful of water. This application is repeated once every twenty-four hours, until one is satisfied that the disease has been controlled. Only in extreme cases are more than two applications necessary, and often one proves sufficient. In addition, an ounce (30 grams) of boric acid is ordered dissolved in a quart (litre) of hot water and the solution kept constantly warm. With this the nurse or mother is instructed to wash out the eyes as often as any pus collects, even if this is required a hundred times a day. One drop of a one per cent solution of an organic silver preparation is dropped into each eye three times a day as long as there is any pus; after this an astringent lotion is substituted. The author also has squares of lint kept on a block of ice and applied constantly, with frequent renewals, for forty minutes in each hour. The treatment described should be applied both day and night until the condition has been mastered.—New York Medical Journal.

The Form of the Reflexes in Chorea.—By Walter B. Swift, A.B., S.B., M.D. (Albany Medical Annals, September, 1915.

Summary: Shaw is confirmed in his observation on a single reflex in chorea—the knee jerk. The present contribution shows a reflex form that may appear during the elicitation of any of the normal reflexes. This form of reflex is really so peculiar as to amount to a sign of chorea of equal dignity with the respiratory signs of Graves and the new voice sign in chorea. The form of the reflex consists in an enhancing, retarding, or otherwise varying of the normal form of the reflex. It may, therefore, in brief, be described as the jerk-flop-wabble form of reflex response. It is any change of reflex motion caused by a choreic contraction.

It occurs most frequently in the medium severe cases; and as a whole probably about once in five cases. In previous literature it was first observed in the knee jerk alone by Shaw. My contribution portrays its form in detail; and shows it may be present in all the other normal reflexes.

Observations of the Voice in Tabes: A Voice Sign.—By Walter B. Swift, M.D., Boston (American Journal of Insanity, Vol. lxxii, No. 2, October, 1915.

Summary: A case of tabes with lesion located mostly in the bulb, showing a marked speech defect of incoordinate articulation important enough to interfere some with business, is treated by a series of vocal coordinating exercises and is relieved. This renders his occupation easier. He considers himself "one-third cured."

BOOK REVIEWS

Diseases of the Skin, by Henry H. Hazen, A.B., M.D., Professor of Dermatology in the Medical Department of Georgetown University; Professor of Dermatology in the Medical Department of Howard University; Sometime Assistant in Dermatology in the Johns Hopkins University; Member of the American Dermatological Association. Cloth binding, 525 pages, 233 illustrations, price $4.00. C. V. Mosby Company, St. Louis, Publishers, 1915.

This is a handy sized volume containing a wealth of material; in size, about mid-way between the quiz compend and the large voluminous works on diseases of the skin. The author makes no apology for presenting another new work on this subject, and describes fully the more common diseases of the skin, omitting some of the rarer types. His main object has been to describe fully those that are most prevalent and which are attracting most attention. The author also has seen fit to omit illustrations of some of the rarer diseases of the skin, and includes among his illustrations, photomicrographs illustrating the histopathology of some of the more common dermatoses, realizing that pathology is essential to correct diagnosis and treatment. Dr. Hazen includes a limited bibliography chiefly in the English language, and wisely so, for the majority of his readers will not necessarily cross the Atlantic in order to learn dermatology. Dr. Hazen, we believe, is the first author who has especially emphasized skin diseases of the negro race, which he has very successfully done in this volume and which practitioners in the Southern States will no doubt appreciate.

In closing, we will emphasize the fact that this handy volume on diseases of the skin will be one that the medical student and general practitioner can refer to without disappointment.

Laboratory Methods, with special reference to the needs of the General Practitioner, by B. G. Williams, M.D., Member of Illinois State Medical Society, American Medical Association, etc., and E. G. C. Williams, M.D., formerly Pathologist of Northern Michigan Hospital for the Insane, Traverse City, Michigan, with an introduction by Victor C. Vaughan, M.D., LL.D., Professor of Hygiene and Physiological Chemistry and Dean of the Department of Medicine and Surgery, University of Michigan, Ann Arbor, Mich. Third Edition. Cloth binding, 200 pages with 43 illustrations. Price, $2.50. C. V. Mosby Company, St. Louis, Publishers. 1915.

This laboratory manual is not of an encyclopedic nature, nor is it a limited compend. It is especially designed for the general practitioner who desires to make easily and inexpensive examinations on which he may depend. The busy physician, without laboratory or hospital facilities has met with discouragements in the past in his attempts to examine specimens, as is demanded of, in his daily work. The physician will find in this volume instructions which will enable him to make chemical tests without having to send his specimens to distant cities for examination. The authors have simplified methods both as to apparatus and technic. Essential factors have not been omitted, but have been emphasized in such a manner as to indicate their importance. In correcting the text for the third edition, the authors' aim has been to keep this little volume true to its name and purpose. Some procedure have been added to the text and they have thought wise to place the majority of same in the appendix rather than to disturb the simplicity of the test, among which may be mentioned, Elastic Tissue Staining, Salting-Out Method for Tubercle Bacilli, A Simple Gram Stain, An Invariable Blood Stain, A Dressing for Laboratory Tables, and a number of others.

For a physician who attempts to do a certain amount of his own examinations, this manual will be a welcomed book.

Speaking of Operations.—By Irvin S. Cobb, author of "Back Home," "Europe Revised," Etc. Illustrations by Tony Sarg. Pasteboard cover, price, $ .50. George H. Doran Company, New York, Publishers.

This interesting little book records the author's experience, and is, without doubt, the funniest book ever written about physicians, hospitals and operations. Cobb is a genius and his writings produce yearly about six hundred million laughs—according to figures computed on the approximate circulation of the Saturday Evening Post.

Cobb stands easily at the head of the long list of humorists now writing in America. If Cobb adds no new literary triumph to the many he has achieved, he will still be remembered as the author of "Back Home," and the creator of Old Judge Priest.

The Adolescent Period: Its Features and Management.—By Louis Starr, M.D., LL.D., Fellow of the College of Physicians of Philadelphia; Fellow of the Royal Society of Medicine, London, etc. 200 pages, cloth, $1.00 net. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, Publishers.

Dr. Starr makes no pretence in offering this book as an exhaustive treatise on the period of adolescence. He points out some of the physical and psychical changes that are to be expected at this period, and offers suggestions as to the methods of management that should be adopted to combat the dangers of these trying years, which if followed, will help to bring about the evolution of adolescence into a healthy and useful maturity. He strongly advises that when children reach the age of puberty, they should be given instructions in matters pertaining to the sex functions and procreation. Such instructions will help to fit children at varying ages to deal properly with themselves and their associates and with sexual events that naturally come to them. The author discusses the physical education of the child at length. The faults and criminal tendencies of adolescence are interestingly delineated. This book could be read with profit not only by parents, but by physicians and social workers generally. Dr. Starr is to be complimented on the masterly manner in which he handlues the subject and the publishers produce it on good paper and readable type.

MEDICAL ITEMS

W. B. Saunders Company, Publishers of Philadelphia and London have just issued their 1916 eighty-four page illustrated catalogue. As great care has evidently been taken in its production as in the manufacture of their books. It is a descriptive catalogue in the truest sence, telling you just what you will find in their books and showing you by speciman cuts, the type of illustration used. It is really an index to modern medical literature, describing some 300 new books and ned editions not in former issues.

A postal sent to W. B. Saunders Company, Philadelphia, will bring you a copy—and you shrould have one.

The American Orthopedic Association announces the appointment of Dr. Mark H. Rogers, Boston, as editor of THE AMERICAN JOURNAL of ORTHOPEDIC SURGERY, the only periodical in the English language devoted to Orthopedics. This Journal, which has now completed 13 volumes as a quarterly publication, will henceforth be issued monthly the first number in the new form being that of January, 1916.

The office of publication hasbeen transferred from Philadelphia to Ernest Gregory, 126 Massachusetts Ave., Boston. The subscription price is $4.00 per year.

Pediatrics,
25 East 60th Street,
New York City.

Dear Sirs:-

Enclosed find check for $8.00 to balance above account. I wish to beg your pardon for being so negligent about paying the bill sooner. I get a great deal of benefit from "Pediatrics" and rely upon it as being one of the best journals I am taking.

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Yours truly,
(Signed) W. A. Royer

PEDIATRICS

Vol. XXVIII FEBRUARY, 1916 No. 2

EDITORIAL

THE QUESTION OF CHILD LABOR

The question of child labor is a vexed one in all parts of the world. In Great Britain the matter has been adjusted in a satisfactory manner for a considerable time, but in various parts of Europe child labor flourished. It goes without saying, that it is an evil from all points of view and that to some extent, it is a menace to the race physically and mentally.

In America child labor has held sway too long and in some parts of the country has approached the proportions of a public scandal.

However, now public opinion seems to have been fully aroused to the harmfulness of the system and the result has been the introduction of the Keating-Owen Child Labor Bill.

Studies of child labor have been carried on by the Massachusetts State Board of Labor, and recently this board requested that Asst. Surg. M. V. Safford and Industries of the Public Health Service should be authorized to assist the board in the problems which confronted it with respect to the employment of child labor in the State, and he was accordingly detailed for this purpose. The work already accomplished in this direction is referred to at some length in the Annual Report of the Surgeon General of the Public Health Service for the fiscal year 1915, published recently.

By recent State legislation the administration of practically all laws and regulations relating to the conduct of industries and the employment of labor in Massachusetts has been placed in the hands of this board, together with complete jurisdiction in matters of industrial hygiene.

Dr. Safford commenced his investigations in May and under his direction comprehensive physical examination of minors employed in the textile industries of the State in accordance with a prescribed scheme of examination calculated to bring out and record any abnormal conditions in the persons examined possibly attributable to the individual's particular occupation or working conditions. While the investigation has not been as yet sufficiently exhaustive to warrant the drawing of any positive conclusions, certain deductions have been drawn.

For instance, an undue proportion of the boys employed have been found to be under height and weight for the ages given but such deficiencies have been found to bear no relation to the duration of employment in the textile industry. To some extent such deficiencies are more apparent than real and are to be accounted for by successful evasion of the State laws with respect to the age and hours of employment of minors. The same thing is apparent, however, in groups of boys whose ages would not seem open to question and would appear to be accounted for by the fact that mill work is chiefly "woman's work" and is likely to attract males who by lack of physical strength or other causes are ill fitted to do anything else, or, in other words, that in this kind of investigation in the textile industry one is dealing to a great extent with material that was pathological from the state. So far as the investigation has gone, it may be said, that, on the whole, considering that much of the work of mill employees calls for no greater degree of intelligence than that of physical strength, there would not appear to have been found thus far a surprising proportion of persons deficient in one of both of these respects.

Any law with regard to child labor should certainly provide that no child under sixteen should work for long hours, not longer, if so long as eight hours a day, and there can be little doubt that reforms in this direction are urgently needed.

CEREBRO-SPINAL MENINGITIS

Cerebro-Spinal menengitis is very rife among soldiers on the French front at the present time and consequently it has been studied and written about a good deal recently. It has been said, with a certain amount of truth, that the disease is one of soldiers and babies. Its epidemic nature is manifested by its spread when over-crowded conditions prevail, but even from this point of view, its dissemination is not like that of most epidemics. Epidemic cerebro-spinal meningitis is an acute systemic infection characterized by gross inflammatory lesions in the meninges of the brain and spinal cord, although not limited to those areas. The casual organism, the diplococcus intracellularis meningitidis, probably passes from the naso pharynx via the cervical lymph chains to the blood stream and is thus carried to the meninges and to all parts of the body. As for the etiology of the disease, it is very obscure. Osler has this to say: "Of the causes of the outbreaks, whether increased virulency in a widespread germ or increased susceptibility under changed atmospheric or telluric conditions, we are as ignorant as when Sydenham summed up the experience of twenty years' close study of the genus epidemicus of London." Osler further says: "In cerebro-spinal meningitis we may be witnessing the struggle of a new disease to win a place among the great epidemics of the world." However, although cerebro-spinal meningitis may be very prevalent among the soldiers in the trenches, after all, it is essentially a disease of childhood.

With regard to treatment, Celie Williams in the British Journal of Children's Diseases writes as follows: "Lumbar puncture alone is of great therapeutic value; it tends to decrease intracranial pressure and this relieves headache, diminishes head retraction and induces sleep; in fact, in cases of bad insomnia it is better to do lumbar puncture late at night. The quantity of fluid removed must be determined by the condition of the child, but in no circumstances is it wise to remove more than 30 c.c. at a time, as dyspnoea and irregularity of pulse may arise. The quantity of serum injected should be less than the quantity of fluid withdrawn. In the case of children it is not usually desirable to inject more than 10 c.c. at a time. In acute cases puncture may be performed daily, or even twice daily—serum, however, even in acute cases, should not be injected more than once daily. As the general condition of the child begins to improve puncture should be done and serum injected at longer intervals, and when the fluid is clear and free of cells should be omitted altogether."

Robb, of Glasgow, has had great success with Flexner's serum, as have several other British practitioners, but some of those who used this serum found it of little avail.

Much has yet to be learned concerning cerebro-spinal meningitis from many standpoints but progress is being made in all directions and it may be anticipated that as knowledge increases the disease will be divested of most of its terrors.

THE FACTOR OF POVERTY IN SANITATION

The factor of poverty in sanitary problems was discussed in Washington, Nov. 26, by Surgeon General William C. Gorgas, whose success in cleaning up Havana and the Panama canal zone have brought him recognition as America's leading sanitarian. His audience was the Clinical Society of Surgeons, assembled in their twenty-fourth annual meeting. Dr. Gorgas said, in part:

"Such sanitary work as is necessary in the tropics is inexpensive, but measures directed against special disease are not the greatest good that can be accomplished by sanitation.

"Before these great results that we can all now see are possible for the sanitarian, we shall have to alleviate more or less the poverty at present existing in all civilized communities. Poverty is the greatest of all breeders of disease and the stone wall against which every sanitarian must finally impinge.

"During the last ten years of my sanitary work I have thought much on this subject. Of what practical measure could the modern sanitarian avail himself to alleviate the poverty of that class of our population which most needs sanitation? It is evident that this poverty is principally due to low wages; that low wages in modern communities are principally due to the fact that there are many more men competing for work than there are jobs to divide among these men. To alleviate this poverty two methods are possible, either a measure directed toward decreasing the number of men competing for jobs, or, on the other hand, measures directed toward increasing the number of jobs.

"The modern sanitarian can very easily decrease the number of men competing for jobs; if by next summer he should introduce infected stegomyia mosquitoes at a dozen different places in the Southern United States he could practically guarantee that when winter came we would have several million less persons competing for jobs in the United States than we have at present. This has been the method that man has been subject to for the last six or seven thousand years, but it does not appeal to me, nor, I believe, to yourselves. This method is at present being tried on a huge scale by means of the great war in Europe. I do not think that I risk much in predicting that when this war is over and we shall have eliminated three or four million of the most vigorous workers in Europe, wages will rise and for a long time no man will be unable anywhere in Europe to get a job at pretty fair wages.

"But I am sure that every sanitarian would much rather adopt measures looking toward the increase of jobs rather than, as we have done in the past, submit to measures that decrease the number of competitors for jobs.

"I recently heard one of .the members of the Cabinet state that in the United States 55 per cent of the arable land, for one reason or another, is being held out of use. Now, suppose in the United States we could put into effect some measure that would force this 55 per cent of our arable land into use. The effect at once would be to double the number of jobs. If the jobs were doubled in number, wages would be doubly increased. The only way I can think of forcing this unused land into use is a tax on land values.

"I therefore urge for your consideration, as the most important sanitary measure that can be at present devised, a tax on land values."

PROTECT YOUR EYES FROM THE MOVIES

The progress made in the character of subjects presented in the movies today, makes it desirable for all enquiring people to at least attend occasionally. Annoying after-effects on the eyes of many prevent them from enjoying the social diversion and often the educational advantages thus derived. The great majority of those who suffer from eye strain after watching moving pictures can find much, if not complete relief, in perfectly fitted glasses. The picture may not be quite so sharp, but this is more than compensated for by the increased comfort. For those with very sensitive eyes, a colored glass, either amber, yellowish green or amethyst, may be necessary to give complete relief. There have been put on the market recently several varieties of colored glass, each of which has some advantages, so that some suitable color can usually be secured. A subdued light in the theatre is much less irritating than when the only light visible comes from the screen. It is also advisable to avoid sitting in a place where it is necessary to look upward, as the additional strain becomes very tiresome, and frequently leaves a headache.

PEDIATRICS

ORIGINAL ARTICLES

SUGARS AND STARCHES IN INFANT FEEDING*

Present Opinion as to Their Uses and Action

BY THOMAS S. SOUTHWORTH, M.D.
New York

The part played by the carbohydrates in the economy of the infant, as in that of the adult, is primarily that of furnishing fuel (carbon) for heat and energy. It is possible, however, for these to be stored in the body, not only temporarily as glycogen, but as fat, which serves both as a fuel reserve and as a protection against the radiation of heat. Sugar enters largely into the composition of breast milk, indicating that carbohydrates in some form are an essential part of the food of infants as indeed of all young mammals. Carbohydrates have been shown to be necessary to the nutritive functions, for when they are lacking metabolism exhibits pathological manifestations (Mendel). The sugar splitting ferments as well as the diastasic ferments which act on starch are present, even at birth, and the latter, especially, increase in efficiency during infancy.

In the routine artificial feeding of the normal healthy infant there really seems little to choose between the employment of lactose (milk sugar), sachrose (cane sugar), and maltose (malt sugar), each of which has stood the test of extended and enthusiastic use. This statement, however, calls for certain qualifying comments. Lactose, which is present in all mammalian milk, seems to have nature's endorsement, while its slower absorption and flavoring influence upon the normal flora of the intestines present certain advantages, although these may cease upon the occurrence of intestinal disturbance.

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*Read before the Pediatric Section of the New York Academy of Medicine in the Symposium on Modern Infant Feeding, November 11, 1915. N. Y. Medical Journal, Jan. 1, 1916.

More attention and investigation should be given to Coit's warning, that lactose from unreliable sources may be capable of causing otherwise inexplicable disturbances of digestion. In view of the possible manufacture of lactose from the bacteria and toxin laden by-products of creameries, care should be exercised in the selection of a reliable product. Certainly the sources from which cane and maltose dextrin are derived are cleaner from the standpoint of the production of toxins. The relative cost, also, of these three forms of sugar as marketed may be a determining factor among the poor and in some charitable activities.

There remains to be mentioned the fact that the limit of toleration for maltose dextrin is about double that of the other forms of sugar, and that it can be given in larger amounts, if desirable, while it is also less liable to cause disturbance when reasonable amounts are unwittingly exceeded. This latter error is not so frequent with the measurable dry forms of maltose dextrin as with the semifluid malt soup types.

But it is in the disturbed conditions of the gastro-intestinal tract, with or without evidences of malnutrition, such as occur unfortunately in a considerable proportion of artificially fed babies, that the greatest interest has centred about the triad of sugars. Finkelstein, whose pronouncement that sugar, especially lactose, under given conditions produced fever with almost mathematical certainty, has gradually receded from his position, which threatened to divide pediatrists into two militant camps, and in this country at least the role of bacteria in causing a superimposed fermentation of the carbohydrates has again recovered a dominant position.

Probably Finkelstein's most valuable contributions to infant dietetics have been the emphasis which he placed upon the irritative and laxative effects of the sugars, especially lactose, when not well borne and the measures he suggested for combating these, even if we do not accept his views in toto. The findings of Talbot and Hill that with the giving of increasing amounts of lactose the acidity of the stools may, upon the appearance of diarrhoea, jump 500 per cent, would appear not only to indicate abnormal splitting of the sugars by bacteria, but also to demonstrate conclusively the effect of such irritant acids in increasing peristalsis.

The injurious effects of carbohydrate intolerance and fermentation are manifold; for while in the normal intestine the carbohydrates have a negligible influence upon the absorption of fat, when they become irritative in the course of abnormal fermentation, increased peristalsis occurs with disorganization of the orderly processes of absorption in the bowel, and nutritive materials, whether derived from fat, protein, or carbohydrates, are swept out with resulting undernutrition. The desideratum, therefore, is to eliminate or decrease the fermentation in order to restore absorption. The importance of this loss of nutritive material from increased peristalsis will, if I may venture to prophesy, play a large part in the future management of malnutrition cases. Furthermore, in fat intolerance accompanied by excess of neutralized fatty acids, or the increased formation by the body of ammonia to meet this unusual demand for alkalies, an abnormal fermentation of the sugar may intensify the picture. Thus acidosis may be caused not only by the abstraction of alkali, but through failure of the normal absorption of nutritive materials. Here not only a reduction of the fat in the food and the administration of some form of alkali are indicated, but the substitution of a combination of maltose dextrin and starch often changes the flora of the intestinal tract and favors much needed absorption.

The addition of cereal diluents to feeding mixtures has long been based on clinical custom with little knowledge of the percentages employed. To White, Chapin, and Ladd belongs the credit of proposing that these percentages of cereal be as carefully determined as those of fat, protein, or sugar. It appears that 0.75 per cent of starchy cereal is usually within safe limits for infants, and sufficient for its protective colloidal effect upon casein coagulation. This proposal, however, has not received the general adoption which its importance deserves, save among the patrons of milk laboratories, where such percentages are readily calculated and dispensed. This apathy has probably been due to the impression created until recently, that the value of such starchy decoctions was a purely mechanical one based upon the coagulation casein, and negligible from nutritive and other standpoints. Dextrin, so closely related to starch and a constant component of malt sugar preparations, has been similarly regarded.

The writer of this paper called attention, some time ago, to the increasing empirical use of cereal decoctions in feeding mixtures, or of wheat starch in special mixtures, for infants suffering from disturbances of the digestive tract, and drew the natural deduction that boiled starch had protective, curative, or remedial properties under such conditions. To this view no opposition has appeared.

Boiled starch has mechanical, nutritive, and protective or remedial properties. The mechanical value is widely recognized and may be dismissed. That cereal grains contain vegetable proteins, which are utilized, will also probably be conceded. Dextrin and starch may be discussed together as having a close relationship and similar properties.

We are aware that in the last half of the first year starchy food is split and utilized for growth; in fact, at this period the giving of starchy food to breast fed infants, or to those previously fed on cow's milk alone, often shows brilliant results in gains of weight. Difference of opinion is chiefly confined to the question at what age such utilization becomes sufficient to be taken into account. Undoubtedly this varies somewhat with the individual, but as long as the presence of amylolytic ferments and their steady increase in production is admitted, there is no questioning their acting upon cooked starch when this is introduced with the food. Such feeding should be kept within safe limits, for it is accepted that overfeeding with starch may cause disturbances of digestion; although it seems probable that if the digestive chemistry of the other food ingredients proceeds normally and the ratio the infant receives is well balanced, there is considerable elasticity in the tolerance of starches.

There remains to be discussed the curative or protective action of starch, which appears to be especially useful where there is intestinal irritation or disturbance due to faulty digestion of other food elements, or to abnormal fermentation or putrefaction of bacterial origin. Aside from the value of the carbohydrates in putrefactive conditions, owing to their favoring influence upon the growth of the lactic types of bacilli, which repress the putrefactive types, the efficiency of starch and its offspring, dextrin and maltose, depends not only upon the greater complexity of the starch and dextrin molecules, whose slower conversion, and consequently delayed absorption, occupy more time and take place while chyme is passing through a greater length of the intestinal lumen. Previously overtaxed and irritated areas are thus given a better opportunity for recuperation. Starch is also recognized as having a tendency to delay peristalsis. There is consequently a definite advantage when the intestinal disturbance has arisen from the use of the single disaccharides, lactose or saccharose, in substituting for them mixed carbohydrates—dextrin and maltose, or starch, dextrin, and maltose.

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CARE OF THE NEW BORN*

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The bringing into the world of children has been the duty of the physician for many, many years, and theoretically he has supervised their bringing up, after they have arrived. Unfortunately, in the greater number of cases his real interest in the child ceases after he has cut and tied the cord, heard the child cry, and has examined it for deformities.

We say his real interest, for while his advice is sought on the various questions of clothing, feeding and the like, and is given in a manner—the profundity of which is in inverse ratio to his knowledge, the average physician spends but little time or trouble in acquainting himself with the advances in this important branch of medicine. If he takes a post-graduate course of weeks or months he is more apt to spend much of his time around the operating rooms than in the wards of a baby-hospital, or if his obstetrical practice is extensive, to give much time to questions directly related to the lying-in period. Thus while his knewledge of the art and science of delivery grows apace, knowledge of what has to do with the child is meagre in the extreme, and we are presented with the familiar spectacle of a physician doing first-class obstetries, and fourth-class pediatrics in the same family.

The average nurse in the average hospital gets little or no training in the care of infants, yet the physician does not hesitate to turn the infant over to her after delivery, seeming to feel that between nurse and grandmother, the baby will be well cared for.

Moreover, if either nurse or physician seeks help from text-books, a good deal of misinformation is acquired along with the mass of scientific facts. This is due to the custom of reiterating statements and directions in edition after edition of standard works, that, to my mind, at least, are hopelessly antiquated, not in accord with recent scientific findings, and, what is quite as bad, lacking in detail.

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*Read before the Section of Obstetrics and Pediatrics, Ohio State Medical Association, in annual session in Cincinnati, May 4, 1915. Ohio State Medical Journal.

In this brief review of the care of the new-born, no claim is made for originality. My desire is merely to outline a course that has proven practical, not only in my own practice, but in hospital work as well, believing from association with the general practitioner and the obstetrician that what, to many of you may seem matters of common knowledge, are not so in fact.

First Attention to the New-Born.—Considering that the new-born infant has just completed a very arduous journey from the warm confines of the uterus to the outer world, twisted, turned and violently squeezed in transit ,to say nothing of now having to breathe for himself, common sense would indicate that the best thing for him would be to wrap him up warmly and allow him to rest.

What usually happens is, that almost before he has had time to breathe, he is oiled and scrubbed, freely exposed to his new environment, due to the frantic haste of the nurse to remomove the vernix. His delicate skin is subjected to this process over and over until the nurse is satisfied, and the oiling process is repeated day after day.

Now the vernix, while unsightly, does no harm, and its removal may very well be left for some hours. True it dries and is more difficult to remove then, but my opinion is that it is better to safeguard the strength of the infant, rather than that of the nurse. Wipe off excess vernix, oil the body and especially the head, dress the cord lightly, weigh the baby, and then lay him away, wrapped up in a blanket with a hot water bottle or two, for at least four hours. If the vernix does not come off easily at one sitting, try again a few hours later—even a third effort may be necessary, but do not allow the child to become exhausted by these efforts.

For the first few days the temperature should be taken per rectum twice daily. If this falls below 98 degrees, enough external heat should be added to bring the temperature up to this figure.

Why oil the skin daily? There is no proof that any appreciable quantity of oil is absorbed by the skin; certainly there can be no nourishment acquired in this way, and, while the dry skin of the undernourished child may be benefitted by oiling, that of the healthy infant does not need it.

Care of the Mouth.—The mouth and nose should be cleansed of mucous immediately after birth, and the eye-lids carefully wiped off, after which some form of silver is put in the eyes as required by law. Daily swabbing of the mouth and nose and cleaning of ears, as so frequently recommended in our text-books, and regularly practiced by our nurses, is not only unnecessary, but positively injurious. The mucus membranes while not sterile, are reasonably clean, are exceedingly delicate, and I am convinced that the sore mouths, ears and noses so frequently seen are directly induced, in many instances, by abrasions occurring during the toilet.

Babies under my supervision are not subjected to these processes. Water is given after feeding to cleanse the mouth, and the number of sore parts materially reduced both in the hospital babies and those seen in private practice.

It is difficult to break nurses of this swabbing habit, and only inspection and repeated caution will do away with it. Even when sore mouth exists, it is well to remember that, as in cases of sore buttocks, swabbing of the former, or the application of ointment to the latter, is apt to prove futile unless the diet, especially the quantity of sugar, be altered.

Care of the Cord.—We all know that hemorrhagic disease, septic jaundice, etc., have as a cause, infection, usually through the umbilicus. How many physicians know how the stump of the cord is being dressed by the nurse? Any similar wound elsewhere in the body would be dressed with sterile gauze only, but my experience is that nurses and grandmothers usually have some favorite application, septic, of course, which they regard as having mysterious good qualities, and which they will use unless forbidden.

Genital Toilet of the Female Baby.—Pyelo-cystitis of B. Coli origin is common in girl babies, often caused by feces coming in contact with the vagina. I believe that if nurses and mothers are taught to wash and wipe the parts toward the anus and away from the vagina, many an infection will be prevented.

Binder and Pinning Blanket.—The infant's belly-band or binder is really useful to protect the cord dressing while such is used. It is neither a strengthener of muscle, a preventive against hernia, nor will it ward off colic, as so many nurses and physicians believe. Nurses usually apply the binder on the infant, as they do upon the mother after delivery, just as tightly as they can pin it, while it should be so loosely fastened that two fingers may be slipped under either edge, the center only being a little more snug.

The abdomen being thus carefully compressed, someone decided that the chest should not be neglected, so the "pinning blanket" was devised. This, of course, must be tight in order to be kept up, the combination with the binder as usually adjusted being the most complete and efficacious preventive of easy breathing imaginable. What Rickets does not do to the ribs, the pinning blanket completes, and, with a tight binder, will produce colic and distress even in the face of a properly arranged diet. If the physician will but point out these defects, we may in time abolish the use of both these unnecessary procedures.

Infant Clothes and Lodging.—Who first decreed that an infant needs long clothes, stockings and knitted "bootees" is not known. We do know that the baby gets along very well without them, the hot water bottle furnishing any heat that bed-clothing will not.

A baby does best in a room temperature of from 65 to 70 degrees Fahrenheit, with the face exposed. Most of them are raised at hot-house temperature. Most nurses and grandmothers have a fear, that almost amounts to an obsession, that a baby will take cold, so, that after heating up the room to 85 degrees, they carefully wrap up his head. Over-dressing faulty construction of clothing, too much bed-clothing, too high a room temperature, and a lack of fresh air, really cause many digestive disturbances which the physician is vainly trying to correct by skipping from one food formula to another.

The impression I wish to convey is that infants are handled too much; that lack of proper care in the simple things is provocative of illness, and that it is the physician's duty to acquaint himself, first with proper methods, then with the routine that is being followed in the nursery.

To any one who has observed the average obstetrical nurse put a baby through his daily paces, lifting, turning, dressing and undressing, scrubbing, oiling and swabbing, it does not seem remarkable that we have so many cross babies.

Let us try to instill some common sense into those who are to care for the infant, beginning with the doctor and ending with the relatives.

Food.—In 1881 Camerer, the elder, set forth the first scientific data as to the infant's physiological requirements of proteid, fats, salts and sugars, as well as those relating to amounts and quantity of breast secretion. Since this time much work has been done in this field, and Comerer's work verified or his findings only slightly modified, as for example, in the observations of Bailey & Merlin (1) in 1914.

It is estimated that the initial loss of weight in the new-born is from 200 to 250 grams, one-half of which is through meconium and urine; the rest through invisible perspiration. The amount secreted by the mother's breasts averages about 15 c. c. the first twenty-four hours, 75 to 80 c. c. the second and about 170 to 180 c. c. the third twenty-four hours. About the sixth day the average milk secretion is 370 c. c. For three days Colostrum is secreted with a caloric value of about 65 per 100 c. c.

How shall feeding for the first forty-eight hours be conducted? Herrmann (2) advocates nursing every three hours, beginning six hours after birth, with supplementary feeding of 10 per cent lactose solution, and cites excellent results in over 200 observations. He believes that the suckling promotes secretion in the breasts, and that the lactose prevents undue loss in weight. Some such plan as this has many followers, yet it has some weak points. Many infants will not even try to suck as early or so often, so there is a waste of energy on the part of the infant, mother and nurse. Moreover, if it does suck, it can only get 15 c. c. the first twenty-four hours; few infants will take over an ounce of fluid, and many not even that much, hence the total intake of lactose is much less than that demanded to make up the theoretical requirement in calories.

The plan which I have followed for some time is based upon the belief that the labor of metabolism of food by the new-born infant more than offsets any gain from the food, and that a rest for a long time after the delivery is extremely valuable to both mother and infant.

The baby is not put to the breast for twenty-four hours. Water, one and a half ounces or less, is given every two hours in the daytime; every four hours at night.

Beginning with the second twenty-four hours, a breast-feeding is given five times only in twenty-four hours, and this is continued throughout the nursing period, no night feeding being given.

One has always to allow for the individual child. Some babies cry at night at first, are easily pacified with water and soon do not waken at night. The large, robust child may show that he is hungry, or the initial loss in weight may not be made up in a reasonable time, say inside of ten days; in either case more frequent nursing must be given, or, if the milk supply is small, supplemental feeding must be instituted. These latter cases are few in number, the majority of the babies doing very well.

In the last twenty-eight observations made at the hospital since this paper was started, the average loss in weight was 7½ ounces, regained in an average of eight days.

This plan of feeding gives freedom from the dangers of over feeding, subjects the infant to less handling, insures a good night's rest to the mother, and helps in persuading the occasional reluctant mother to nurse her baby, as better opportunity for some social relaxation is offered.

I can recommend this plan as being very practical and satisfactory both in hospital work and in private practice.

Whatever plan is chosen for the first few days, I am a firm believer in the long feeding interval later. Many of our standard text-books still advise feeding every two hours, but the experience of hospitals, where the long interval has been a custom for years, together with that of men who have been following this plan in private practice, should have some influence. I am convinced that in a large number of cases of breast-nursing troubles the fault lies in over-feeding by the text-book method.

Allow me to encourage those who have feared to try this plan by the statement that thousands of babies have been so fed, and have done well. You will in no sense be a pioneer in thus breaking away from text-book instructions any more than you are when, in using Belladonna in whooping-cough, you discard book-dosage of the drug.

Abandonment of Breast-Nursing.—It is not within the scope of this paper to more than mention the fact that we cannot make any food that equals in value, good mother's milk. Any one will grant this. Yet it is a matter of wonder-ment to every one who makes a study of infant feeding, to observe the calmness with which so many physicians remove a baby from the breast and prescribe some form of artificial feeding, with the bald statement that the mother's milk does not agree. The sample of milk so gravely taken from the breast is, more often than not, never examined properly, or it may be, when examined, the findings mean nothing to the physician. Points to be remembered in this connection are, that the only sure way to tell how much food the infant is taking is to weigh him before and after nursing, every ounce of increase in weight representing an ounce of milk swallowed. A feeble infant may be able to draw but a small quantity of food—try a shorter interval and more feedings.

It is rather difficult to bring up the quantity of poor milk by malt compounds, etc., but an effort should be made to do so. In the greater number of breast-feeding difficulties, too rich a milk, or too large a quantity ingested at a feeding is the cause Try longer intervals, or better, shorten the nursing period One case did very well on five two-minute feedings daily. Much damage is frequently done by routine attempts to "build up" the mother's milk supply by over-feeding, when the milk is already of good quantity.

Dilution of breast-milk by giving water before nursing or alteration of it by the use of alkalis, sodium citrate, sodium bicarbonate or lime water, will often aid.

Vomiting may cease if the infant be not disturbed for a half hour after nursing.

Investigation of the details of clothing, room temperature, etc, as mentioned above, may reveal faults.

Even one feeding of breast-milk is an aid to the digestion of artificial food. Let the infant get all the milk the breasts will secrete, unless it is proven that it actually disagrees. Start supplemental feeding before abandoning breast-milk feeding entirely, and then only after continued loss in weight for three weeks, or in the face of some serious complication.

Colic, distress or constipation in the presence of a gain in weight, does not indicate artificial feeding. The breast-feeding can probably be suitably adjusted. Have patience! The advantages of breast-feeding are so many that it is worth a great deal of effort to continue it.

Artificial Feeding.—A word about artificial feeding! You will all agree that with cow's milk, some form of sugar, the cereals and a few chemicals, we have the raw materials for making a proper food for an infant, and that the more one studies the problems of proper mixing of the ingredients, the less need he has for the proprietary foods.

What is the best way in which to arrive at the proper amounts of these various ingredients to use, and why are so many physicians, who are anxious to learn, making such poor headway in the matter?

Out of the chaos concerning this question, which reigned many years ago, there arose a plan of estimating percentage of fat, proteid and sugar by using milk from different depths in a bottleful that had stood long enough for cream to rise upon it. The use of this plan involved thinking about the baby, and was a long step forward. Unfortunately, its use also demanded considerable mathematical ability on the part of the doctor, and the best evidence that few physicians possess this knowledge, is the bewilderment in which they approach a feeding problem, the lack of good results they obtain, and the frequency with which they turn to the druggist's stock of patented foods for the final solving of this problem.

A much simpler plan of feeding has been in use for many years, and by it countless numbers of children have been artificially fed. We refer to the German idea of simple dilution of whole milk, based on an estimate of the caloric needs of the infant, and a knowledge of the caloric values of the various dilutions.

It is conceded that many men are still carefully calculating percentages and are expert in the matter of infant feeding, but we believe that the average man is hopelessly confused in trying to follow this plan, and that, if he were taught the principles of the simpler way, he would show more progress.

Why is it that this German plan is so seldom mentioned in standard text-books, or, if mentioned, is dismissed with a scant paragraph? It cannot be that it is worthless, for results disprove this.

After one has heard a few discussions on this subject he is rather impressed with the fact that some men cannot refer to anything German without evincing considerable rancour, and here, perhaps, we may find the answer to our question. Yet no one will deny that out of German pediatric hospitals have come many valuable suggestions.

It is rather interesting to observe how, little by little, the various objections to so-called "caloric feeding" are dwindling in number. To those who for years have been so careful not to vary a fraction of one per cent in the quantity of proteid put in food at a certain age, the scientific finding, German, by the way, that proteid is practically inocuous; that an excess of proteid acts very favorably in some types of diarrhœa and malnutrition, must have come as a surprise indeed.

The advantages of this plan, as I see them, are—a minimum of mathematical labor both for the physician who prescribes the food and the person who makes it up—a basis of low fat feeding which seems best under any plan—a diminution in the expense of artificial feeding, and finally—simplicity which makes for more accuracy on the part of physician and nurse.

No plan of feeding does away with the necessity for the observation of the individual case, nor for the use of brains in prescribing the food, but I see that the plan mentioned is worthy of a trial by those of you who, though giving adequate time and thought to the subject of artificial feeding, are yet somewhat confused by the intracacies of the so-called "percentage method."

With the same object of simplifying infant feeding, I would suggest abandoning the routine addition of lime-water to the food, reserving the use of this or other alkalis until they are indicated. I would use cane-sugar as being cheap, easily obtained and quite efficient in a large number of cases, prescribing malt or milk sugar when indicated, and I would not use cream additions unless the required higher fat content could not be obtained by the use of a less dilute whole milk. If, in this connection, mothers and physicians can be taught that in breast, or more especially in artificial feeding, no matter what the plan used, system must be introduced, and that what is best for the infant today may not be so a month from today, we shall see fewer infants suffering from neglect.

We hear a great deal of discussion these days upon the subject of specialists; whether this or that operation should be done by the general practitioner, or be referred to one trained for a particular line of work. The public and the physician has seen the need of specialists in obstetrics, despite the old-time statement that every doctor delivered babies, and

I believe that the demand for men specially trained in the care of infants is a legitimate one, and the field large enough to encourage the proper men to enter it.

Needless to remark, the greater proportion of babies will still be cared for by those who do not wish to enter the specialists' field, so that a logical step toward efficiency would be to teach simplicity in the routine of such care.

Let us then weed out the unnecessary and obsolete; let us demand of our hospitals that the pediatric department be turned over to one who is really interested, and that they cease to use this staff position as a sop to the pride of some man who fails to make any other staff position; that the nurses be given real training in this branch of medicine as well as in surgery—if necessary, by an exchange of time with a real baby hospital, and that the mother shall feel that good advice in these regards may better be sought from us than from the popular magazines, whose pages, full of misinformation on these topics, only accentuate the fact that physicians as a class are not at present satisfying this want of the mothers.

Allow me here to enter a word of protest against the custom of including in the "books for mothers" long chapters on infant feeding. Such articles, leading, as they do, the untrained mother or nurse to experiment with the baby's food, are certainly responsible for many of our cases of chronic feeding difficulties. Let us as physicians so train ourselves that we, rather than the uneducated nurse armed with "so-and-so's" booklet, shall become the accredited authority in all matters pertaining to the baby.

A consummation of these ideals is what is aimed at in the popular "Child Welfare" movement, which, to my mind, is needed, not alone among the poor and ignorant, but among the so-called "better-classes" as well.

SIMPLE GUIDES FOR THE ARTIFICIAL FEEDING OF INFANTS*

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The subject I take up is of such magnitude, that pages would be required to treat it properly. I have therefore limited myself to a small part, and that is to mention certain simple guides which will tend to simplify the rather complicated subject of artificial feeding of infants.

I will simply pass the subject of breast feeding by stating that usually it can be likened to the Monroe Doctrine; it takes care of itself in the majority of cases. But when we take the subject of artificial feeding of infants, we meet with the difficulty of making a food to fit the infant. Every infant presents a personal equation; we must therefore individualize our infants and not generalize them. It is undoubtedly true that in the present state of our knowledge, it is impossible to lay down exact formulæ which will suffice even for the majority of normal infants. But it is a fundamental knowledge of a few guides I wish to present, which will enable the physician to make a formula for the particular infant at the bedside or in the office with ease and success.

Briefly I wish to state the various methods in use for artificial feeding. The milks in use are of lower animals; cow's, goats', and asses' milk are mainly used. The methods in use may be divided into: (1) empirical; (2) scientific.

1 Empirical.—Whole milk (raw, boiled, diluted), skimmed milk (raw, boiled, diluted), top cream mixtures, flour and starch mixtures, malt soup, buttermilk feeding, condensed milk albumen milk, proprietary foods, caloric method, etc.

2. Scientific.—The percentage method, advanced by the late Doctor Rotch, of Boston, and taken up by Walker Gordon twenty years ago, was an effort to make cow's milk equal in percentages to human milk without any regard to its digestibility. It is this method that is responsible for the idea that proteins are the main source of the gastrointestinal disorders

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of infancy (which has been disproved by Finkelstein and Myer by the introduction of Eiweiss milk, which contains from three to four per cent of proteins). Another objection to this rather complicated method is the difficulty for the physician to understand it, so that they have been driven to the indiscriminate use of patented infant foods or to copying formulas to fit the age of the infant without ever having seen the infant to be fed. In order to carry out proper infant feeding there are three requirements:

1. We must have clean milk from a tubercle free cow.
2 It must contain proper elements.
3. These elements must be digestible and in proper quantities.

Cow's milk can be made clean and digestible and contains the proper elements. The elements of most importance are proteins, fats, and carbohydrates in the form of sugar. In order to make these elements digestible, various methods have been used.

Proteins.—1. The percentage method has been used, but its objections I have already mentioned above.

2. Lime water and other alkalies have been used to modify the digestibility of proteins, but in the proportions used they were worthless.

3. Gruels with milk have been used, but an infant cannot very well digest gruels properly until about four months old.

4. The split protein theory—when with cream. Here most of the sugar is soluble in whey: we are therefore giving a food with large quantities of sugar and rich in fat from the cream.

5. The simplest method and in my experience the best for aiding the digestibility of the proteins, is, to boil the milk for three minutes. Besides aiding the digestion of the proteins, it also aids the digestibility of the fats and destroys harmful bacteria that the milk may contain. The objections to boiling are the production of scurvy, rickets, anemia, constipation, and poor musculature. In a large series of artificially fed infants at the outpatient department of the Post-Graduate Hospital, together with some private cases, I failed to see the development of any of the above mentioned nutritional disturbances Where the boiled milk was given for a longer period than six weeks, orange juice was also given to prevent scurvy. As for the constipation, it seems that the addition of sugar

overcomes it. The infants brought up on this method never developed rickets. Anemia was overcome by the early administration of vegetable soups and yolk of egg, both rich in iron which is deficient in milk. The infants in the majority of cases resembled breast fed infants.

As to other objections, such as the milk sugar becoming caramelized, the ferment action of the milk being destroyed, and the formation of hydrogen sulphide, these changes do not take place with three minutes' boiling; to produce such changes milk must be boiled from seven to ten minutes.

Fats.—The digestibility of fats is also aided by boiling, and, besides, cow's milk fat rarely does any harm in the infant If, however, fat indigestion should occur, as evidenced by soapy stools which are dissolved by ether, we can overcome it by using skimmed milk.

Sugar.—This is the most important element; it has been disregarded in this country. It is most difficult to digest and gives the physician and infant the greatest amount of trouble. The sugars in use for infant feeding are milk sugar, cane sugar, and malt sugar in the form of dextrimaltose. As to the digestibility of the sugars, a great amount of work has been done, the most recent by Sherman and Jones, who took thirty infants, and fed them on six per cent milk sugar in barley water, six per cent cane sugar in barley water, and six per cent malt sugar (dextrimaltose). The gastric contents were withdrawn in one hour and the results were found to be as follows: Dextrimaltose is twice as stimulating to the gastric juice as either cane sugar or milk sugar, and cane sugar is slightly more stimulating than milk sugar. The conclusions to be drawn are, that malt sugar in the form of dextrimaltose is the easiest to digest and therefore is best taken care of by the artificially fed infants; cane sugar comes next, and milk sugar last. Cane sugar should be used for healthy babies. In infants hard to raise, in new born infants, and when a new formula is being given, or after any nutritional disturbance we use dextrimaltose. When beginning a new food, we always begin without sugar, and then add it slowly in small amounts, always being guided by the infant's tolerance. Sugar is, as before stated, a laxative

In taking up the third requirement (sufficient quantity of the proper elements), we are again confronted by a discussion of the various methods which I have briefly dwelt on. The quantities of the various elements to be used are as follows:

Proteins.—Allen and Grulee have shown that the amount of protein contained in one ounce of milk is required to each pound of weight of the infant in twenty-four hours to maintain a nitrogen equilibrium (that is, no gain), and in order that the infant may build up sufficient nitrogen in the tissues, the proteins must be one and a half ounce of milk for each pound in twenty-four hours. That is, an infant weighing ten pounds requires ten ounces of milk in twenty-four hours to maintain a nitrogen equilibrium or keep its weight, and fifteen ounces to store up nitrogen or make a gain.

Fat.—The same is true of fat; it requires one and a half ounce of milk in twenty-four hours to the pound, that is, the infant, in order to gain, must have the fat contained in one and a half ounce of milk for every pound of its weight in twenty-four hours.

Sugar.—An infant weighing below ten pounds requires one ounce of sugar in twenty-four hours. An infant weighing above ten pounds requires one and a half ounce of sugar in twenty-four hours. We never give more than two ounces in twenty-four hours. When giving sugar for the first time, or after any nutritional disturbance, we never give the required amount, but we start with a teaspoonful and increase every day, or every other day, until we reach the required amount.

The foregoing guides give to the physician a simple method of using the various individual elements. It should be used as a barrier. To limit the formula as a whole, I use the caloric method. A calorie is the amount of heat required to raise the temperature of one kilo (2½ pounds) of water from zero to 1 degree C. It is a heat unit and is used as expressing a food value With it we know exactly how much food to furnish the infant in twenty-four hours, with reference to its requirements and weight. But in order to ascertain the required calories, it is necessary to divide infants into three classes:

Class 1.—Fat baby over 5 months, or an average baby at any age requires 40 to 45 calories per pound in 24 hours.

Class 2.—Average baby under 4 or 5 months, or a moderately thin baby at any age, requires 50 to 55 calories per pound in 24 hours.

Class 3.—An emaciated baby at any age requires 60 to 65 calories per pound in 24 hours.

Bearing these three classes in mind, it is only necessary, when we see the infant, to place it in one of the classes. This can readily be done by inspection, palpation, and weighing of the infant. It is a very simple method to tell if a baby is normal, thin or emaciated.

It may be asked, Why does an emaciated baby require more calories than a fat baby?

1. An emaciated baby cries and frets more, and uses more calories than a fat baby.

2. The amount of heat produced is in proportion to body surface, that is, the greater the skin surface, the more heat produced. The skin surface of fat babies is the same as that of the emaciated babies, therefore they produce the same amount of heat. We can readily see that the emaciated baby requires more calories to make up that heat, because its weight is less.

In order to make our formula according to the calorie method, it is necessary to know that one ounce of four per cent milk equals twenty calories and one ounce of sugar by weight equals 120 calories.

As to the number of feedings in twenty-four hours, either two, three or four hour intervals are used. I use the three hour interval in all babies who are not premature, and in the latter I use a two hour interval. If the three hour interval is used, we give food at 6 and 9 a. m. and 12 m., and at 3, 6. and 9 p. m., and again at 2 a. m. until six months of age. If the two hour interval is used, we have ten feedings. The four hour interval, I must admit, I have not as yet given a thorough trial, for in dispensary practice it is impossible to have the mothers carry it out.

The quantity to give an infant at each feeding is determined by the following rule: Give one or two ounces more at each feeding than the number of months in the baby's age; never give less than three ounces, and never more than eight ounces. Experiments have shown that an infant one week old can take three ounces every three hours, with good results, and my experience bears it out. The reason is that the liquid portion of the milk passes into the intestine immediately, and the solid portion of the milk takes from three to three and a half hours to pass through. The liquid portion makes up about three quarters of the milk and the solid portion makes up the other quarter.

The Rule for the Diluent of the Milk.—That depends upon the number of feedings and the amount we give at each feeding. Example: Baby three months old; the number of feedings according to the rule would be seven; amount to give at each feeding would be, according to the rule, from four to five ounces. We then multiply seven feedings times five ounces and we get thirty-five ounces of food for twenty-four hours. Therefore that infant requires thirty-five ounces of food in the twenty-four hours. If we now deduct the amount of milk we desire to use, we get the quantity of the diluent to be used. Having learned these guides, we can now proceed to feed our baby.

Example.—Baby A . six months old, weighs fifteen pounds, stools normal. This baby belongs to the first class, forty to forty-five calories. This baby, according to the rules, requires six feedings (after five months), no night feeding. The amount at each feeding in this baby would be seven to eight ounces (one to two ounces more than the baby's age).

Protein and fat requirements would be fifteen pounds (the baby's weight) multiplied by one and a half ounce equals twenty-three ounces of milk required. The sugar required is one and a half ounce for the twenty-four hours (baby weighing over ten pounds). Total amount of food for the twenty-four hours would be six feedings, and eight ounces to each feeding; six times eight equals forty-eight ounces of food for the twenty-four hours, including milk and diluent.

The weight of the baby is fifteen pounds. The calories necessary for each pound ars forty to forty-five. The child requires fifteen times forty-five calories, equals 675 calories; this child requires food for twenty-four hours amounting to 675 calories. From this amount we must deduct the calories for the sugar to ascertain the amount of milk and diluent required, one and a half ounce of sugar times 120 calories per ounce of sugar equals 180 calories. Subtract 180 from 675 equals 495 calories to be made from the milk. We divide 495 by twenty (because there are twenty calories to each ounce of milk) equals about twenty-four ounces. This entire formula of forty-eight ounces requires twenty-four ounces of milk, and therefore leaves twenty-four ounces for the diluent (in this case boiled water) and one and a half ounce of sugar (here cane sugar because this is a normal baby). Our formula for this baby would consist of twenty-four ounces whole milk, twenty-four ounces of water (boiled for three minutes), and one and a half ounce of cane sugar, to be divided into six bottles of eight ounces each, to be given at 6 and 9 a. m. and 12 m., and 3, 6, and 9 p. m.

This, to my mind, is the simplest and the most successful method of artificial infant feeding we have today. For the method I am indebted to my chief, Dr. R. Dennet.

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DIAGNOSTIC PHENOMENA OF INFANTILE WEAK-MINDEDNESS, NAMELY: IMBECILITY, DEMENTIA AND IDIOCY*

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A new born baby corresponds in every sense to our definition and comprehension of Idiocy. It is simply a living reflex mechanism; reflexly and through automatism, its heart beats and it breathes, reflexly it nurses, reflexly, and physically (because of pressure) its bowel and bladder empty themselves, at times, with what seems unnecessary frequency. These absolutely vital functions are governed by the spinal cord, including its upper end, the bulb, from the standpoint of evolution, the oldest part of the nervous system, with these phenomena the, as yet undeveloped brain has nothing to do.

The new born infant practically feels not, sees not, hears not. though it reflexly responds to stimuli with those jerky incoordinated movements, the so-called mikro-kinetic movements of infancy, resulting from nerve fibres which have not, as yet, put on their myeline sheath, in reality, movements very similar to those of the multiple sclerotic, who has lost this insulating myeline covering of his pyramidal fibres.

An idiot is defined as one with the mind of an infant, the Binet-Simon tests rate individuals with the mind of a one-year infant as a low-grade idiot; with the mind of a two-year-old, as a high-grade idiot; from 3 to 7 years they are rated from low to high-grade imbeciles, and from 8 to 12 years, from low to high-grade morons, after which age they are supposed to be able to care for themselves. The infant, then, being considered as devoid of mind, it seems somewhat anomolous to attempt a discussion of infantile weakmindedness, which must be a mental state somewhat below idiocy. Of course an infant cannot be an imbecile, it doesn't know enough; it cannot be demented, as it can not lose mentality which it never possessed.

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*The Detroit Medical Journal.

The word infant literally means, unable to talk, this faculty first appearing at about the age of two years, infancy ought then to cease.

Retarded mental development, or lack of any such development in a child may be due to simple evolutionary defect, either in quality or quantity, or construction of the brain, as seen, for instance, in the micro—or hydro-cephaly, or in the offspring of epileptics; or there may be mental defect in a brain normally constructed from every standpoint, due either to some intra-uterine disease, such as meningitis, or to some accident during birth, such as a hemorrhage from the use of forceps, or from prolonged labor and pressure; or again it may be due to lack or perversion of some of the internal secretions, notably those of the thyroid gland and pituitary bodies.

Because of this faulty or absent encephalic development, the feebly receiving centers inadequately respond to ordinary stimuli, causing a deficiency of that spontaneous attention, however, which stimuli through the special senses normally provoke in a child, and to which, with its bizarre, purposeless movements, it reflexly responds. Hence the earliest diagnostic symptoms of impending phrenasthenia, aside from the gross stigmata of degeneracy, is lack of attention, it is of importance that this be early discerned, and the mother usually does so. She feels that, somehow, her baby is not like other babies, that it does not notice things, there is very early that indefinable something in the physiognomy, and lack of expression, in the vacuous stare of the phrenasthenic, something unnatural in its movements, which presages future calamity. It must never be forgotten that all this may be due to congenital blindness and deafness.

This lack of attention to external stimuli points, then, most strongly to abnormal brain development, resulting later in a greater or lesser degree of feeblemindedness, for, other things being equal, the greater the amount of spontaneous attention evinced in early life, and of spontaneous and acquired or voluntary attention, in later life, the better the mentality; individuals without the faculty of attention, are incapable of any education, and lead simple, vegetative lives. Consecutive attention is a most rare and most valuable acquisition, one absolutely necessary to the attainment of any large results.

The special senses of smell and of taste and, on the lips and tongue, of touch, all indispensable to the maintenance of infantile life itself, seem very acute from the first day, that is, bad odors and bitter tastes cause grimaces of the little face, while sweet substances, like sugar, are swallowed with apparent satisfaction; the acuteness of the sense of touch of the parts named, is shown by the reflex activity of nursing. Indifference to bad odors, or bitter or sour tastes, or undue backwardness in nursing suggests, with reason, blunting of the senses, and some faulty cerebral construction, likely to make itself more manifest later in life. These senses are always blunted in phrenasthenics, and in direct proportion to their mental deficiency.

Weakminded children may remain unduly still, as instance the cretin, or on the contrary be in constant motion, especially in some rhythmic, automatic manner, not usual to the normal child, as, for example, the mongolian type.

Infantile or juvenile precocity is never of good omen, such children seldom fulfill early expectations, they are likely, in fact, to land below the normal. The lower the race or species, the quicker the physical and mental development of the young, a chick knows all it ever will know, a few hours after birth; it can select its food, it knows its mother's call; a monkey is fully equipped within a few months; a hottentot, a few years after birth, while the caucasian brain can improve till near the very end of life, it seems to be the only tissue capable of such continued development.

It goes without saying, that before one can discover abnormalities of physique, actions or mind in a child, one must be able to certainly recognize what is normal; gross defects of any kind are easily seen and understood, but slight, if real stigmata of degeneracy should be early discovered. Misshapen head, or ears, or asymetry of features, high arched palate prognathism, malformed genitals, undue proportions of the length of limbs to body, in fact, anatomical anomalies of all kinds are significant in direct proportion to their number and prominence. It is felt that if nature has so failed in external construction, she is most likely to have erred in the building of the much more delicate, complex brain, and statistics fully verify this inference.

A sort of Binet test might easily and profitably be worked out for infancy, giving the psychical age in months, rather than in years, as is done for older children and adults, for instance: The average normal baby can support, unsteadily, its head at from two to three months, (2 to 3); it makes some poorly co-ordinated efforts to reach objects at from 3 to 4 months; it can support, steadily, its head at from 4 to 5 months; it begins to associate names with persons and things, it will look toward, or reach for some object named, it will recognize nurse or mother at about the sixth month; it can sit on the floor alone between the seventh and ninth month; it may say a few monosylables, as "dada," and it creeps at about the tenth month; it pulls itself up on a chair when about one year old; it can walk alone, may be without having crept, anywhere from the twelfth to the fifteenth month; it uses a few verbs, as "up," "go," "take," at about the fourteenth month; a few sentences as "go by-by," "dear dolly," etc., at the eighteenth month. It talks at least a few sentences when two years old. Failure to support the head, or reach for objects at six months, or inability to sit alone at twelve, or stand after fifteen months, suggests some physical or mental defect.

Cretinism has seldom been recognized before the sixth month, frequently not till after the first year, probably because so rare as to be unsuspected. The symptoms are: General apathy, it seldom cries or moves, the anterior fontenelle is late in closing, the thyroid gland is not discernible, the head is large, face broad, nose flattened, lips and tongue thick, teeth late and bad, eyes widely separated, skin dry and rough, hair coarse and scanty, abdomen protuberant, frequently with umbilical hernia, though it is often mistaken for rhachitis, it ought to be diagnosed early. The face of the Mongolian type is frequently so striking as to be recognized a few days after birth, with its dark skin brachycephalic skull, small slanting palpebral fissures, large tongue, covered with hypertrophied papillae, it has a palpable thyroid gland, and is not at all apathetic. It is generally the last child of a large family, and is felt to be the result of a devitalized reproductive capacity of the mother. They seldom reach a mental age of over four years. A negroid and Indian type of feeblemindedness has been mentioned, in other words, marked resemblance in a Caucasian to an inferior race is usually accompanied by mental insufficiency.

Frequent causeless crying and screaming and uncouth sounds generally prognosticate later mental deficiency.

The amaurotic type of phrenasthenia, for some unknown cause, is found only among Jewish children; they seem to be born healthy, and in every way normal, but after a few months begin to develop a weakness of the neck muscles, a dimness of vision, and an increasing apathy, which progresses to complete atrophy of the cervical and other muscles, amaurosis, and idiocy, death usually occurring inside of two years.

Impending idiocy makes itself felt during the early months of life, imbecility not till after some years have passed. Hereditary insanity, it might be remarked, generally first shows itself about the age of puberty.

Weakmindedness is a quantitative, insanity a qualitative deviation from the normal.

Until the discovery of the Spirochette, and the Wasserman test, there was little knowledge, or even suspicion, of the frequency with which lues entered into the etiology of mental defects. It was felt by many to be insignificant, now it is shown that about 20 per cent of these defectives are hereditarily luetic; juvenile tabes and paretic dementia are now much more frequently recognized.

Early diagnoses of mental deficiency are essential, for proper appreciation of the unfortunate state results in more kindness and more intelligent care and education; even high-grade morons should not be educated along with normal children.

As the feeble-minded are generally endowed with strong sexual appetites and correspondingly weak morality, they being rather *unmoral* than *immoral*, and recognizing the strong hereditary transmissibility of these mental defects, it becomes imperative for the welfare of the community that they be carefully watched throughout life, that they be effectively segregated, or sterilized.

SOCIETY TRANSACTIONS

AMERICAN PEDIATRIC SOCIETY

Twenty-seventh Annual Meeting

Lakewood, N. J., May 24-26, 1915

An Unusual Case of Congenital Heart Disease, with Demonstration of Specimen.—Dr. John Lovett Morse, Boston, Mass. The child was brought to the hospital at the age of four years, having had a severe heart attack. No murmur could be heard by anyone, however, except the house doctor, and no thrill. He was seen three or four times a year afterward, and shown to successive classes. On November 30th, 1914, he came to the hospital with the history of having been taken suddenly ill the night before. No murmurs nor thrill could be heard. On the following day he was not examined, but the day after that Dr. Howland discovered a murmur, which, however, could not be heard by others. On December 4th he developed a diastolic murmur; and later a systolic. This was followed by double pneumonia. Within the next few weeks the murmur diminished, but did not disappear. He then died suddenly, presumably from embolism. Only a partial autopsy was obtained, which showed complete atresia of the pulmonary artery, congenital defect of the intraventricular septum, vegatative endocarditis, an open ductus arteriosus, and atrophy of the right ventricle. I am told that there are only five other cases like this on record.

Dr. Hand: Dr. Morse's specimen is very unusual in the nature of the defect of the septum between the ventricles. At least, it is according to literature, the common site for such defects is in the muscular wall, and not in the membranous portion, where this defect seems to be. In the few instances in which I have seen the lesion, it has always been in the muscular, rather than the membranous part.

Dr Northrup: I think that a couple of years before Dr. Morse was born, I presented such a case ,as this before the Pathological Society of New York. I believe it was the same thing; and if he would like another case of the kind to add to this of his, I will try to look it up. Dr. Koplik reminds me that in the archives of the College of Surgeons I could probably find it, and I will add it to the list.

Dr. Howland: I saw the child, and certainly the murmur was a very mild one. It was diastolic, while the murmurs that one hears associated with congenital cardiac disease are almost always systolic. He had a very soft systolic murmur on the left side of the heart.

We had a discussion as to what the disease might be at that time, and came to the conclusion that it was acute endocarditis grafted on congenital heart disease. I have seen one or two other cases of congenital heart disease, which we were unable to follow, that had only a diastolic murmur and no systolic, the diastolic making a continuous murmur; and I have wondered what the lesion might be in these cases. If I might, I should like to describe an interesting case that we have had recently, which I followed from the age of seven weeks to the patient's death at fifteen months.

At birth, she had a pulsating mass in the epigastrium. She was covered over with a thin membrane, such as one finds covering a case of spina bifida. One could feel the expansion and contraction of this mass. The child at birth had no cyanosis, and no disturbance at all. She had a prolonged and severe attack of pneumonia at the age of fourteen months, and died. There was found a true ectopic cordia, with an opening in the diaphragm. The ventricles communicated. The right consisted only of the conus arteriosis. The left was below the right ventricle. It was very small. There was only a systolic murmur in that patient, associated with an opening in the septum; but it is astonishing that with such a pronounced lesion, indefinite life is apparently possible.

Report of a Case of Myelogenous Leukemia in an Infant Nine Months Old.—Dr. J. H. Mason Knox, Baltimore, Md. The object of this paper is to place on record the youngest case in which the blood picture was characteristic. The patient was a female infant, nine months of age. The striking thing in the case, besides the extreme youth of the patient, was the rapid course of the disease, in less than three weeks. There was no enlargement of the lymph glands or spleen, and no record of hemorrhage or of necrosis of the mucous membrane. The symptoms apparently were entirely referable to the gastrointestinal tract. The great number of leukocytes in the circulating blood (200,000 per cu. mm.) is to be accounted for by a possible peripheral infection, which demanded a further study of the blood. While it is possible to have as high as ten per cent of myelocytes in an acute infection, in this case the atypical granulations seen with neutrophilic myelocytes as well as in the presence of eosinophilic and basophilic varieties gave evidence that it was a true primary disease of the bone-farming organs.

Dr Blackader: I saw a case that I am not quite sure falls under the same category, although I think it does. This case puzzled me a great deal. I was asked to see a child eight months old, and found it looking comparatively well; but an anxious mother thought it was not looking well. The child had been born when the mother was forty-five years old and had had no child for seven or eight years. It had not been gaining in weight for some weeks when I saw it with the family doctor, but I could find nothing wrong. Although it was a little pale, there were no physical signs. The liver was normal, and the spleen I could not detect. There were no enlarged glands, and apparently no trouble with the stomach. There had been a little vomiting, but the stools were of good color and normal consistency. There was no distention of the abdomen. The tongue was clean.

I altered the diet a little and left. I heard nothing about the patient for ten days, when I was asked to come and see it again. I saw a great transformation in the child. It was extremely pale. There had been a little vomiting during the week before. I had the urine examined, and nothing of a suspicious character was discovered. I also had the blood examined, and the report showed 22 per cent hemoglobin, 1,200,000 red cells, 16.000 mononuclear leukocytes, and a few increased other constituents of the blood. There were no eosinophiles that could be detected.

I was at a loss to know the cause of the trouble. I altered the diet again a little, and went away. Two days from this time the child died. There had been a very slight temperature, with rapid breathing (34), and a pulse of 130. Whether the condition was a food intoxication or something similar to that in Dr. Knox's case, I do not know. I was completely puzzled at the rapidity of the blood changes, in less than two weeks. The child had taken fairly nourishing food, which had apparently agreed with it up to then.

Dr. Knox, closing: I saw with Dr. Brown a case of his with similar clinical symptoms to the case Dr. Blackader has described. It turned out to be a splenic form of leukemia. A number of examinations, especially toward the end of life, showed a great reduction in the number of leukocytes, which at one time went down to 5,000 white cells. I think that case would correspond more closely to the one Dr. Blackader referred to than the one I spoke of. The rarity of this form of disease at this age, and the very perplexing symptoms, all pointing to the stomach and intestines as the source of the trouble, teach the lesson, that one should examine the blood early when there is persistent nausea and vomiting.

Some Interesting Facts plainly brought out by a Chart Method of Studying and Managing Cases of Diabetes Mellitus in Children.—Dr. Dewitt H. Sherman, Buffalo, N. Y. Charts can give one, in the easiest and quickest way, a fund of information concerning a case. In many febrile diseases, valuable impressions are often gained, if the whole course of the temperature is before one's eyes. The same statement applies to diseases of long duration, such as diabetes mellitus, if it can be simply charted. This can be done, and the charts I show contain all the information necessary, and yet are not too cumbersome. They tell you what you have done, when you did it, and the results. The upper half of my chart shows, in unbroken lines, the number of grammes of the three food elements ingested, and their total calorie value. The lower half shows, in broken lines, the urine analyses, and hence the condition of the patient on the selected diet.

For further ease of readings, colored crayons are used. The continuous red line above the number of grammes of carbo-hydrates ingested, and the lower broken red line shows the amount of sugar in the urine. The upper broken black line shows the proteids ingested, and the lower broken black line, the amount of urea.

The unbroken lines above, of purple and blue, show respectively the amount of fat ingested and the calorie value of the diet.

The broken lines below, in brown, green and purple, show the amount of urine, of ammonia-nitrogen, and of acetone eliminated. To save breadth of chart, the figures on the side line must be multiplied by one hundred for the amount of urine. Because the amount of ammonia-nitrogen and acetone are too small for charting purposes, they must be multiplied by ten and twenty, respectively, and then charted. With a few points of explanation understood one can, at a glance, grasp the whole situation.

In the first chart shown, skimmed milk was first given, because we were told the child of eight years could not easily tolerate fats. This allowed us very definitely to study her carbo-hydrate tolerance in the form of milk sugar. Because the amount of sugar fell on skimmed milk from twenty-seven grammes in the first twenty-four samples to five and a half grammes, we definitely learned that her milk sugar tolerance was poor Not till all the milk was prohibited was she sugar-free We learned, as shown, that she could be sugar-free on meat, eggs, and butter, but as soon as a fodder food, such as onions, was given, she passed four-tenths as much sugar in the urine as she had ingested carbo-hydrates in the onions. While she tolerated meat and eggs well, when fish was added the amount of sugar which appeared was about one-sixth of the amount of fish ingested. This was peculiar. The acetone was always present, and gradually increased on all diets given. This alone showed that in spite of the fact that she was sugar-free she was losing ground. As the acetone increased, so did the ammonia-nitrogen, and this was another sign of unfavorable progress.

As regards Chart 2, the following points are of interest. With neurotic tendencies and a precocious intellect, this girl of ten years was a victim of cyclic vomiting. We have charted four attacks of vomiting, and before three of these sugar appeared. Naturally, it quickly disappeared on the starvation of persistent vomiting. It has consequently occurred to me that in cases of cyclic vomiting we might find sugar just before an attack more often than we suspect, due probably to the same faulty metabolism which causes the vomiting.

We tested the fat tolerance twice, as shown on the charts. The first time we gave 145 gm. and promptly sugar appeared. The second time we gave 165 gm. per day for six days. Soon sugar (2.50 gm.) appeared and decreased to 1.00 gm. when the carbo-hydrates were reduced much below a well-known carbo-hydrate tolerance. After the high fats were lowered below a well-known tolerance, the sugar not only persisted, but rose to 5 gm., and she had a vomiting attack. This late rise in sugar and the vomiting were then, without doubt, due to the damage done by the fats.

I could then conclude: 1st, that an excess of fat may, in itself, cause sugar to appear, and, 2nd, that high fat may be a cause of cyclic vomiting. This second statement has been proved in her case, because, since her fats have been kept at 100 gm. or less per day she has not vomited. As regards the acetone, the fats caused it to increase.

I mentioned above that the child was a neurotic. One day, as shown, sugar appeared while we were testing the carbohydrate tolerance. As no clear cause was seen, we kept on increasing the carbo-hydrates, and in spite of this increase, the sugar disappeared. Upon very thorough investigation, we learned that the sugar was undoubtedly due to a guilty conscience, because she had been for weeks doing something she knew was not right. This shows that an unbalanced nervous system can produce sugar.

The chart, in her case, shows no idiosyncrasy to any of the different starches, proteids or fats. They were all equally tolerated. Her tolerance to milk sugar in milk and levulose in fruits was only fair, and no different from any other starch.

I show the third chart only for one reason. At varying intervals, I give the usual starvation or water day. This boy of four years on one of these days, vomited, with nervous manifestations, going into more or less of a stupor. This I experienced once in another child, except that the second child was delirious. No cause have I found for such an up-set in either case.

Summary.—Charts aid materially in the study of a case of diabetes. In one of my cases, sugar was caused: 1st, by high fats; and, 2nd, by mental anxiety. In another, fish caused sugar, while all the other proteids were fairly well tolerated. In one case, high fats caused cyclic vomiting. Sugar may appear before cyclic vomiting attacks more often than we suspect.

Differential Diagnosis of Stenosis and Spasm of the Pylorus.—Drs. Alfred Hand, Jr., and Harry Deaver, Philadelphia.

Pa.: No more puzzling simulation exists than that between so-called spasm of the pylorus and congenital hyperthophy with stenosis. When the diagnosis of hypertrophic stenosis is established, operation is indicated. I feel that if a mass is present, the diagnosis of hypertrophic stenosis is established; but that in the absence of a mass, even if there is visible peristalsis, with projectile vomiting and failure of bismuth to pass the pylorus during the X-ray examination, it is advisable to persist in dietetic treatment and make a further study.

Dr. Harry Deaver, Philadelphia: The operation to be done is a posterior gastroenterostomy. These little patients stand this operation fairly well, and the cases that I have operated on early have all recovered. I have never felt a mass in a case of pylorospasm, but I can always feel a mass in congenital stenosis. If the children make their abdominal muscles too rigid for this to be felt, I give them a few whiffs of ether.

Dr. Herrman: The first case that Dr. Hand mentioned was certainly unusual. I have never seen a case of this kind without peristalsis, and I should hesitate to make the diagnosis of this condition without its presence. Most observers now believe that the great majority of the cases of pyloric stenosis of hypertrophy are associated with spasm, and that the greater part of the symptoms are due to the spasm plus the stenosis. Dr. Deaver says that the palpation of a mass is an indication for operation. I doubt whether all would agree with that; because many have seen cases of tumor that got well without operation.

In regard to pure pyloric spasm, excluding cases that vomit persistently for other reasons, and taking only cases with characteristic symptoms, I do not believe that it is proved that there are cases of pyloric spasm without stenosis of the pylorus—cases in which the characteristics are all present, and yet no change in the pylorus is found.

As to projectile vomiting, I think that this cannot be considered as a good ground on which to base a differential diagnosis or as an indication for operation. I do not think that men now believe that there are two distinct sets of causes, one of pure spasm, and one of pyloric stenosis. The tendency is now to consider that these cases are but mild, moderate and severe types of the same condition; and that the advisability of operation depends upon the severity of the type of case and the progress of the child towards cure. I have had cases in which I advised operation and the parents refused to have it done, and yet the child got well; so it is very difficult to decide. I do not believe that it is the border-line cases that give us the most trouble. Many surgeons favor a simple operation which can be done more quickly than can a posterior gastroenterostomy, severing the mucous membrane without going into the stomach, and then sewing it up.

Dr. Coit: Recognizing the entity of congenital pyloric stenosis, I want to sound a note of warning with reference to the exercise of judgment in referring cases to the surgeon. This should not be done too hastily. I think that we should remember that congenital pyloric stenosis is an anomaly and is not of frequent occurrence.

I want to report a case in which the diagnosis of congenital pyloric stenosis was made by three consulting physicians. The radiographer was asked to make pictures of the case, which confirmed the diagnosis of the three consultants, besides the suspicion of the attending physician. A surgeon was employed, and the child was to be put on the operating table the following morning.

Now I am not arrogating to myself a capacity for curing cases of congenital pyloric stenosis, for I do not think that this was a case of that kind at all; although the clinical evidence of its being so was marked, and the radiographer thought that it was that condition. I saw the child on the evening of the day on which the pictures were taken. The patient had never retained a meal after the first week of life, either its mother's milk or artificial food. Nevertheless, the same child has never lost its normal food since the time I saw it.

At that time, it was perhaps five or six weeks old. The mother's milk had been abandoned at the end of the fourth week. Projectile vomiting was marked, and I was told that there was peristalsis; but I did not get any evidence that there was a palpable tumor recognized. The condition was that of extreme atrophy. At birth, the infant had weighed eight and a half pounds; but when I saw it, it weighed only five pounds and a half. The nutrition was low. The vitality was low. The skin was loose and putty-like, staying wherever one pushed it; as we see it do in cases of extreme atrophy.

About all that the child could do was to functionate with its cardiac and respiratory systems, and it did have a little capacity to suck.

The baby had been for two weeks without its mother's milk, on various mixtures, and was then on whey.

I thought that there had been too much ultra-scientific knowledge applied to the case, and that it was time to make an application of practical knowledge. I asked the mother to wash the nipples and give the baby some of the milk. It nursed for three minutes on the right breast and three minutes on the left breast. I had the bottle boiled, and it finished the meal with the whey in the bottle. It did not vomit a drop, but went to sleep; and a report was later given me that it had retained every meal of a complemental feeding with the breast milk.

Its temperature, when I saw it, was 94, but within one week its temperature was normal, its vitality had been raised, and its capacity for living considerably elevated. It is now between eight and nine weeks old. We adopted the complemental bottle, but the form of nursing was continued. During the four weeks in which the directions that I gave have been followed, the child has greatly improved. The attending physician was positive that the baby was suffering from pyloric stenosis, but it is now getting three ounces of breast milk, an ounce and a half from each breast, at each feeding. The milk obtained in this way contains less fat than the child would get if allowed to remain and empty the breast.

The X-ray pictures showed no stenosis of the pylorus. If it had been operated on, I think that the baby would have died on the table. The only lack in the clinical evidence of the existence of congenital pyloric stenosis at the time was in the history that there was no tumor palpable. It seems to me an interesting case, and one that should make the physician guarded in his judgment as to whether the patient should go to the surgeon or not.

Dr. Miller: It seems to me that the question of operation in these cases rests on the severity and gravity of the symptoms. There is much discussion as to the nature of these cases, whether they are due to spasm or tumor, but it seems to me that one cannot base the decision to operate on the presence of tumor at all. In fact, cases have been operated on at autopsy and have shown a marked tumor, when no tumor was palpable during life, and vice versa. The indication for operation, I think, is simply the severity of the symptoms.

There is a point often referred to that I have found to be a very vital one, and that is as to retention. I have had a case under observation for some time, and that child's stomach was never empty; and yet it is getting well, and there has been no vomiting for months. There is still retention, however. Retention sometimes goes on eight or ten months, away into convalescence, in these cases, so that it is not of so much importance as a diagnostic point. It is the severity of the symptoms that calls for operation.

Dr. Coit: I should like to announce that this picture was taken ten minutes after the ingestion of a bismuth meal. It shows no shadow beyond the pyloric ring. The second picture was taken twenty minutes after the meal, and shows a little seeping through the pylorus. Then we could get the outline of the pylorus, but no shadow, in the picture taken an hour and a half after ingestion.

Dr. Deaver, closing: I never operate in these cases, unless I am able to detect a palpable mass. When I have had pylorospasm under consideration, and have been asked about the advisability of operation, I see whether I can feel a tumor; and in every case in which I have operated, I have been able to palpate a thickened pylorus, which was as hard as gristle.

In the two patients that died, I could not get a probe through an opening. I do not lay so much stress on peristalsis as I do on the presence of a palpable mass; and I never operate unless I can feel one.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE

Sugar for Sick Infants.—Nobecourt and Nadal (Bulletins de la Societe de Pediatrie, Paris) here report the results of adding 10 per cent ordinary sugar (saccharose), to the food the infants were getting. This was rice-water, buttermilk, milk, kefir or pea or bean broth in thirty cases described in detail. This large amount of sugar seemed to be instrumental in promptly arresting a tendency to excessive vomiting in two of four cases. In sixteen much debilitated infants or backward in developing, the high sugar content was generally well tolerated and in eight of the cases aided in a rapid and progressive increase in weight. One babe of 10 months was unable to take starch in any form, but thrived well on the highly sweetened milk. Another child whom they describe as an "azotemic athrepsic," grew into vigorous health in a few months on the highly sweetened milk. No sugar was ever found in the stools or urine. In the eight other cases the cachexia continued unmodified. Six infants with acute dyspepsia took the sugar well and rapidly recovered. Other infants with bronchitis and other affections took the sugar well and it seemed to have a favorable influence on the course. No signs of intolerance of the sugar were observed in any of the infants. As a rule, the stools lose their diarrheic character. The sugar evidently sustains the strength and combats the destruction of tissues.

Whooping Cough.—Luttinger (New York Med. Jour., 1915, ci, 1043) reports 138 cases of whooping cough treated with stock vaccines prepared by the New York Health Department. Of this series of cases 115 came under treatment within the first three weeks of the paroxysmal stage. According to Luttinger, the vaccine treatment seems to have increased the paroxysmal stage by over two weeks when compared to cases in which drugs alone were used. What was more significant to the author, however, than the shortening of the duration of the paroxysmal stage, was the prompt amelioration of the severity of the individual paroxysms which followed the administration of the vaccine in nearly all cases. On the other hand, the cases treated with drugs, as a rule, showed first a decrease in the number and not in the severity of the individual paroxysms. Luttinger states that the vaccine seemed to have a prophylactic value when given in sufficiently high dosage.

The Cerebrospinal Fever Problem.—By H. Warren Crowe (Lancet, November 20, 1915). The most satisfactory method of diagnosis of this disease is by enriching about ten c. c. of the spinal fluid with glucose up to one per cent, incubating for twenty-four hours, and then examining smears made from the centrifugated deposit. If a serum is used which has antibodies specific to the infecting strain of organism, the treatment will be satisfactory in a large proportion of cases. It might be well always to test the agglutinating power of the serum against the patient's organisms, and several different serums might be kept on hand, from which the most suitable could be selected. Vaccine treatment usually has some effect, specially on the temperature, but the doses used must be small, one million organisms being quite enough for the initial dose. The vaccine should always be autogenous and can be readily prepared from the incubated and enriched spinal fluid of the patient himself. In the study of contacts for the purpose of isolation the great difficulty is in the growth and identification of the meningococci when obtained from the posterior nares or fauces. After culture the organisms can be identified as meningococci by agglutination with the blood serum, serum of convalescents, or with commercial antimeningococci serum. It was found that if contacts were isolated together on suspicion the proportion of the organism among them rose. Contacts should, therefore, never be isolated together in any considerable numbers. In the treatment of carriers, the greater the effort the smaller the success, and the stronger the antiseptic employed the more difficult was the eradication of the organism. Nature unassisted, or aided only by the weakest washes, was more successful in clearing up carriers than human efforts. The presence of nasal catarrh increased the probability of a person's becoming a carrier, and it was found that the presence of even a small amount of nasal mucus on a culture plate greatly increased the growth of meningococci.

Protective Inoculation Against Mumps.—A. F. Hess (Proc. Soc. Exper. Biol. and Med., 1915, xii, 144) calls attention to the fact that mumps confers a marked immunity and that second attacks are rare. He therefore used the blood of convalescents as a prophylactic. Six to 8 c. c. was injected intramuscularly in 17 cases. These children were in wards where there had been cases of mumps for the past month and where it continued to appear for a month following these inoculations. In no case did one of the inoculated children develop mumps, whereas one-third to one-half of the non-inoculated cases developed the disease. The blood was taken from children who had just recovered or had been well for about ten days. It would seem that this proceeding could be made use of in the institution as well as in the home, and that this type of therapy could be adapted to the case of measles and other infectious diseases.

Tumor of the Pons varolii in a Child without Optic Neuritis.—Dr. J. Ramsay Hunt presented before the N. Y. Neurological Society (N. Y. Medical Journal) a boy, aged seven years, from the third division with the following history: Onset, two months before, with headaches which were inconstant and not of great severity, these persisted. One month later, there developed deviation of the eyes and a peculiar posture of the head, and at the same time some unsteadiness of gait, with occasional attacke of vomiting. He was sent to the Lincoln Hospital and transferred to the Neurological Institute of February 25, 1915, two months after the onset of cerebral symptoms. The course of the disease had been steadily progressive. He was an only child, and his family history was negative; both parents were alive and well. He had had mumps, chicken pox, and bronchitis, but no other illness. Two years ago, he was injured by a truck and suffered a fracture of the leg. In this accident he also received a head injury; recovery, however, was complete.

The child was unable to stand or walk on account of motor weakness and ataxia. There was considerable apathy and dullness, but he was easily aroused and was at times bright and talkative for several hours. The headaches persisted and he vomited occasionally. There was considerable dysphagia, and the speech was dysarthic and typically bulbar. He understood perfectly, carried out all directions, and attempted to answer questions; sight and hearing were not impaired (coarse tests). Pupils were unequal and reacted promptly to light and accommodation. Convergence was feeble. There was complete paralysis of the associated movements of the eyes toward the right and to the left; the excursions upward and downward were prompt and normal; no ptosis. Corneal reflexes were present. Doctor Holden reported, on February 22d, optic discs normal; subsequently, March 5th, and again, on March 11th, no optic neuritis. There was a distinct facial palsy of peripheral type on the right side with contralateral hemiplegia. In addition to right facial palsy there was weakness of the right fifth, with some deviation of the jaw toward the right. The jaw could only be partially opened, owing to spasm of the muscles (trismus). The jaw jerk, however, was active. The tongue was weak, and could not be protruded because of fixation of jaw. Palatal innervation could not be tested, owing to trismus. Both arms were ataxic, especially the left. Both legs were weak and ataxic, especially the left. Spasticity of both lower extremities existed with clonus and Babinski, left greater than right. Pain sensation was keen over face, trunk, and extremities, and was apparently equal on the two sides. There was no Kernig symptom and no rigidity of the neck. Pulse was rapid, 100 to 108 to the minute; respiration 20 and of regular rhythm; systolic blood pressure, 70 to 75; temperature not over 99 degrees F.; urine free from sugar and albumin; Wassermann test negative, both of blood and cerebrospinal fluid; no increase of cells of cerebrospinal fluid. Examination of the heart, lungs and abdominal organs proved negative.

This patient was presented as having probably tumor of the pons varolii. The focal symptoms were characteristic of this localization, i. e., paralysis of associated movements of the eyes, hemiplegia alternans with facial and trigeminal involvement; later, double hemiplegia much more marked upon the left side; bilateral ataxia, dysarthria, and dysphagia. Tumor was regarded as probable on account of the steady progression,. the headache and vomiting, and the associated dullness and apathy. The absence of optic neuritis in this case would not militate strongly against the diagnosis of neoplasm, as it was a well recognized clinical fact that in central tumors of the pons and medulla, optic neuritis was often absent. Indeed, Oppenheim stated in his experience it was.the rule. It was thought that meningitis and encephalitis pontis could be excluded because of the nature of the onset, the steady progression, and the negative cerebrospinal 'fluid findings.

The common forms of tumor in this region were tuberculoma and glioma. As there were no indications of tuberculosis, glioma was regarded as more probable.

The patient died a few days after presentation, and the clinical diagnosis was verified. The pathological diagnosis was glioma pontis.

Mumps: A Critical Review.—Feiling (Quart. Jour. Med., 1915, viii, 255), (Jl. Amer. Med. Sci.), states that this disease often belies its supposedly benign character as shown by recent advances in the knowledge, epecially, of its complications and especially that of the nervous system. The disease may occur without acute inflammation of the parotid gland. The age incidence reaches its maximum between the fifth and fifteenth years, but no age is exempt. The mortality is extremely low. There is a prodromal stage before the appearance of the characteristic parotitis, during which infection is possible. This stage is probably four days long. The duration of the contagion is probably three weeks from the onset of the disease, although Sharp reports two cases remaining infectious for six weeks. The causal organism of mumps has not been satisfactorily isolated. Nicolle and Consielle by injecting fluid from parotid glands of patients with mumps into the parotid glands of monkeys apparently have demonstrated transmission of the disease, the occurrence of immunity following it and blood changes similar to those found in the human patient. No organisms were found. Gordon's experiments along similar lines with monkeys showed distinct changes in the nervous system such as lmyphocytic infiltration and nerve cell degeneration. He concludes that mumps is apparently due to a filterable virus comparable to that of poliomyelitis, smallpox, and typhus; that the virus can pass through a Berkefeld filter and is destroyed at 55 degrees C. Feiling gives the changes in the blood as a slight increase in the total number of leukocytes; a lymphocytosis both relative and absolute which persists from the first day for at least fourteen days. The occurrence of orchitis does not invariably alter the blood picture. The blood changes are of distinct value in differentiating mumps from other inflammatory swellings of the parotid or submaxillary salivary gland. The complications affecting more frequently adults are grouped as follows: Abnormal modes or onset, such as testicular involvement preceding the parotiditis or meningeal symptoms ushering in the disease; architis followed frequently by atrophy: pancreatitis, the commonest cause of which, in children, is probably mumps.

Changes in the Aorta in Children and Their Relation to Arteriosclerosis.—In spite of the numerous studies and animal experiments, the etiological factors of arteriosclerosis are not agreed upon. The influence of age and mechanical stress is no longer considered of as great importance as the more active agents of which infections are the most important. Experimental proof of the influence of bacteria has been brought forward by French and American investigators. Added to this, Stumpf (Ziegler's Beitrage, 1914, lix, 890) has studied the arteries of young children in which no evident arterial disease was recognized, but where the microscopic study demonstrated the beginning of damage in the arterial wall. The aortas of 84 children were examined. Evidence of fatty degeneration was present in 44 cases. Of these 44, 31 were suffering from chronic disease. Of 36 cases dying of acute infections, 12 showed definite arterial lesions. The chronic conditions associated with arterial degeneration were tuberculosis, chronic suppurations and marasmus. The author believes that the influence of these chronic diseases upon the arterial wall is not directly through the toxins, but rather by the indirect action of the altered state of nutrition.—Amer. Jl. Obs. & Dis. Women and Children.

The Significance of Extractives in Nutrition.—Hans Aron (Monatsschr. f. Kinderheil., Bd. xiii, Nr. 8, 1915) says that every pediatrist recognizes that infants artificially fed with a food that contains a proper quantity of the various constituents of nutritious food, such as ablumins, fats, carbohydrates, and salts, and which gives a proper caloric value may still fail in getting the best nutrition and lose in weight. When we add to the ration a small amount of sugar through the medium of flour and malt the nutrition improves at once and weight is gained. Again at the end of the first year, even in breast-fed children the milk no longer satisfies the needs of the growing infant. New factors are at work here which have as yet been insufficiently studied. These are developed through the extractives. Organic compounds which are composed of water, albumin, fats, ash, and cellulose have been called extractives. What part these materials play in nutrition is still undetermined. Flour and its pure carbohydrate has a different action from malt extract or maltose. The author tested on young rats a diet consisting of albumins, fats, carbohydrates, and salts with and without extractives, so as to ascertain the actual effect of the presence or absence of the extractives. The rats were fed with a mixture of casein butter, and white starch with salt and bran. When the bran was present the nutrition was good, and weight was gained. If pure cellulose was substituted for bran, poor nutrition was caused, weight was lost and death finally ensued. The addition of a small amount of pure extractives from bran caused immediate improvement lasting as long as the extractives were fed, and disappearing as soon as they were removed from the ration. Rats fed without butter at first do well, later they lose. If both bran and butter are taken away the effects are more startling. The results of the study of the effects of bran on nutrition and growth are graphically represented by numerous weight curves. Examination of these curves and the accompanying explanations of the experiments shows conclusively that a certain amount of extractives is necessary to the nutrition of the animal. The perfect development of the animals is seen to be due to the presence in the ration of a certain amount of extractives of bran, the butter, albumin, fats, and carbohydrates of the food remaining the same at all times. Whenever these extractives were absent from the food there recurred loss of weight, poor nutrition and, if continued, death. The return of the extractives to the food brought about immediate improvement.

Tuberculosis of the Female Genitalia in Childhood.—Graefe (Inaug. Dissert., Halle, 1914) had an opportunity of observing 19 cases in children and comes to the following conclusions: Tuberculosis of the genitalia is much less common in children than in adults, but when found, appears more frequently to fall between the ages of one to five and ten to fifteen. These tuberculous foci are secondary to older lesions in other parts of the body and arise through a hematogenous infection. It is more common in the tube and uterus and rare in the ovary, vagina and vulva. The tuberculous process begins in the mucous membranes of the tube and uterus and from here extends into neighboring parts. Progressive caseation is prone to occur while there is little attempt at healing. Most frequently the process spreads from other parts to the tube, although in some instances a simultaneous attack in several regions may occur. The secondary infection of the peritoneum from the tube is more frequent than the reverse. Primary tuberculosis in the vagina and vulva is very unusual.

Parapneumonic Empyema in Children.—Gerhardt recently published five cases of parapneumonic empyema in adults. He points out four characteristics of benign parapneumonic empyemas: (1) Pus develops early in the fever stage of the pneumonia. (2) The course is benign, i.e., the temperature—and pulse—curve and the duration of the pneumonia are unaffected. (3) There are usually no micro-organisms in the pus. (4) The amount of pus is small. L. W. Sauer (Arch. Pediat., 1915, xxxii, 207) records two cases which occurred in young children. One of these shows how little the picture of the pneumonia is affected; also that pus is present within sixty hours after the onset of the pneumonia. Bearing the seriousness of empyemas in young children in mind, it becomes especially important to lay stress on the benign character on the above-described type of parapneumonic empyema, and to warn against hasty surgical interference. Although pus in the pleural cavity means surgical measures to many, such measures are not necessary in this type.

Acute Pyelitis.—E. J. Wood (Arch. Pediat., 1915, xxxii, 199) says that acute pyelitis is being frequently overlooked in infancy because of the neglect of routine microscopic urinary examinations in all cases, but especially when there is obscure fever. While the condition is more frequent in female children, still there are many cases in males which are overlooked. The theory that acute pyelitis is always an ascending infection with the colon bacillus from the soiling of the vulva is losing its hold and other sources, as infection from the colon by way of the lymphatics, is gaining ground. Acute pyelitis is often primary and does not necessarily follow one of the acute infections. Malaria and typhoid are often diagnosed in this condition. The disease responds promptly to the use of potassium citrate through the rendering of the urine alkaline. Hexamethylene amine preparations are most disappointing and their use is to be questioned in infancy.

Benzol Treatment of Lymphatic Leukemia.—A. E. Meyers (Arch. Pediat., 1915, xxxii, 188) records a case of acute lymphatic leukemia with autopsy in a male child four years and three months old treated with benzol. Among the interesting features were the gradual reduction of the white blood cells with comparatively small doses of benzol; the extreme high temperature at the end, making it resemble a terminal infection; and the complete reversal of the picture of the white blood cells as it appears in cases of leukemia not treated with benzol. With the exception of the blood picture there were no other signs of benzol poisoning. As Billings points out, the blood picture, after the administration of benzol, becomes rather complex and difficult to analyze. Gastrointestinal symptoms were absent throughout the entire case. A heart murmur, which was thought to be an anemic one, was found at autopsy to be probably due to endocarditis and an interstitial myocarditis. Under benzol treatment there was a gradual ascent of the polynuclears and the hemoglobin. The apparent good results were obtained while the patient was receiving benzol minims iii four times daily.

The Cause of Chorea Complicating Pregnancy.—Albrecht (Ztschr. f. Geburtsh. u. Gynak., 1915, lxxvi) describes the case of a primipara aged twenty-two years, who was taken with chorea at the beginning of the first pregnancy. Her condition became pronounced and she was treated by intragluteal injection of 20 c. c. normal prengancy serum. In twenty-four hours the choreic movements had ceased and the patient was much better. She also gained somewhat in weight. He adds the case of a girl, aged sixteen years, in whim chorea appeared at the time when menstruation became established. From the study of these cases he believes that chorea is an intoxication in the pregnant patient with substances formed by the embryo, or in patients at puberty with substances produced by the glands which form the internal secretions.

Icterus of the New Born an Infectious Disease.—Pfaltzer (Ztschr. f. Geburtsh. u. Gynak., 1915, lxxvi) describes a series of cases of what is termed "nuclear icterus in the newborn." This disease shows its most important changes in the nervous system and nuclei of the cerebral tissues, showing yellow discoloration, and also the ganglia. The writer draws attention to the esophagus as the site of infection, probably with the colon bacillus. The act that children frequently put their fingers and other objects into their mouth readily explains the occurrence of such infection. A toxin produced by the bacillus circulating in the blood would account for the lesions in the muscles and in the nervous system. It is interesting to note that in the muscle fibres some of the most characteristic changes were observed. In this connection it must be remembered that such infection is rarely caused by one germ only, but staphylococci and streptococci may undoubtedly be present. In those cases where it was thought that no infection was present the characteristic changes in the muscle bundles were absent. This condition also calls attention to the frequent infection of the infant from the umbilicus. The practical conclusion of these investigations lies in the necessity for strict asepsis, and that the child's mouth be invaded as rarely as possible.

Typhoid Fever in Children.—K. G. Percy (Boston Med. and Surg. Jour.) analyzes 308 cases of typhoid fever which have been treated in the Children's Hospital of Boston since 1913. This series embraces children from infancy through the twelfth year. The author comes to the following conclusions: Typhoid is a relatively common disease in childhood and far more prevalent in infancy than formerly supposed. Symptomatically it is ushered in very much as in adults, with headaches, fever, malaise, and abdominal pain as the most frequent symptoms. In this series and in a large collected series from the literature, the spleen is enlarged in 71 per cent of all cases, rose spoots are seen in 61 per cent, positive Widals are seen relatively early in 88.2 per cent, white blood count is below 10,000 in 73 per cent. The fever lasts an average of twenty-five days. Relapses occur in 11.8 per cent, intestinal hemorrhages in 4.2 per cent, perforation of intestines in 1.2 per cent, complications in 10.6 per cent, and the mortality is 5.3 per cent. Therapeutically, a diet, bland, high caloric, and suited to the individual need of each patient, is most important. Hydrotherapy seems to have a vital place in the treatment of the febrile and delirious stage of the disease. Enemata are essential in a high percentage of cases. Stimulants and other symptomatic drugs are to be used as need arises, for typhoid is a disease, cured not by medicine, but by good nursing, and keen, sensible therapy.—Medical Record.

BOOK REVIEWS

American Materia Medica, Therapeutics and Pharmacognosy, by Finley Ellingwood, M.D., Late Professor of Materia Medica and Therapeutics in Bennett Medical College, Chicago; Professor of Chemistry in Bennett Medical College 1884-1898; Author of Ellingwood's Practice of Medicine, Ellingwood's Pregnancy and Labor; Editor Ellingwood's Therapeutist; Member National Eclectic Medical Association; American Medical Editors' Association. With a practical consideration of the principles of Pharmacy and Pharmacognosy, by Prof. John Uri Lloyd, Ph.M., Ph.D., LL.D. 500 pages, handsome cloth binding. $5.00. Published by Ellingwood's Therapeutist, 32 North State Street, Chicago.

The cordial reception of his first work, in fact, the urgent demand that has grown for this book, has caused Dr. Ellingwood, for the past two years, to carefully scan every statement of his first book, omitting unnecessary and unproven, and including everything practical and valuable in drug application; studiously considering every new suggestion from all the schools of medicine, weighing them carefully and introducing them, with new Eclectic vegetable remedies, and new provings of these remedies, especially all those of American origin, into this work.

So much knowledge has been accumulated concerning the action of remedies; so many new facts have been determined; so much has been learned concerning the action of remedies by hypodermic injection, by which method they were not previously used; and so much of interest to every doctor in the field outside has been discovered, that it was impossible for Dr. Ellingwood to introduce all this with the fixed matter of the first edition of this work. By this thorough revision and advanced writing, this book becomes now the only new complete work on the application of vegetable remedies before the profession, the very latest work on Materia Medica and Therapeutics of any character.

Such a work is peculiarly timely. The European war has so seriously shut off the supply of foreign drugs that the attention of the American physician has been forced upon American products, and he is learning that his own country's products, are, to a great extent, ample for his needs. This state of affairs calls for a book on Materia Medica which will furnish the profession, upon a plane commensurate with modern demands, the result of investigations, observations and experimental uses of this class of medicines. And Doctor Ellingwood has met the demand.

Every statement in the book has been carefully weighed. Every fact has been estimated fully, in order that it shall be accurate. The best-known authorities have been consulted, so that the work may at once be recognized as highly authoritative in every particular. The result is a highly practical and up-to-date textbook of Materia Medica and positive therapeutics which will delight the heart and contribute to the success of every practitioner who believes in his calling. The section on Pharmacy and Pharmacognosy, by Professor Lloyd, it is hardly necessary to say, adds immense value to the work.

Painless Childbirth, Eutocia and Nitrous Oxid-Oxygen Analgesia, by Dr. Carl Henry Davis of Rush Medical College and the Presbyterian Hospital of Chicago. Price $1.00 net. Forbes & Company, Chicago, Publishers.

The first part of the book traces the development of the attempts to relieve the suffering of labor. The chemistry, pharmacology and toxicology of the various analgesics are compared and their advantages and disadvantages considered with unbaised fairness.

In the second part of this volume eutocia is given as the goal for which the physician is striving. The author believes that in the cry for painless childbirth that the desire is for eutocia—not amnesia. Granting that painless obstetrics is desirable the author pleads for safer and better obstetrics. He claims that with all the modern progress in preventive medicine there has not been a corresponding increase in the safety of maternity.

Recognizing the need for relieving pain in many cases of childbirth, Dr. Davis offers in the highly important third section of his book a method which should receive the consideration of every physician, whether he practices obstetrics or not. This is the nitrous-oxid-oxygen analgesia. This method has passed the experimental stage, for it was used successfully in Europe in the early 80's and the results there have more recently been duplicated in the Presbyterian and other American Hospitals. The statistics recorded are extremely interesting. The author gives in detail the technic for administering nitrous oxid-oxygen analgesia in operative as well as in normal labor.

While the advocates of "Twilight Sleep" agree that it should be used only in an especially equipped hospital and by a specialist, Dr. Davis believes that the nitrous oxid-oxygen analgesia may be used safely and efficiently by every physician who is trained in the science of obstetrics. He believes that nitrous oxid-oxygen analgesia is a logical method of relieving the suffering during childbirth and a great aid in securing eutocia.

Medical Electricity and Roentgen Rays and Radium.—By Sinclair Tousey, A.M., M.D., Consulting Surgeon to St. Bartholomew's Clinic, New York City. Second edition, thoroughly revised and enlarged. Octavo of 1219 pages, with 798 practical illustrations, 16 in colors. Cloth, $7.50 net; Half Morocco, $9.00 net. W. B. Saunders Company, Philadelphia and London, 1915.

The author of this work, Sinclair Tousey, has gathered together a huge volume of valuable information on the subjects of medical electricity, roentgen ray and radium, a fact that makes the book necessary to the man doing this character of work. The diagnosis of lesions by means of the x-ray is well considered. An interesting feature is that part of the work devoted to the application of the various agents under consideration in disease. This holds good particularly in skin lesions, as well as in genito-urinary affections. The author's discussion of the high frequency in bladder growths is also interesting and instructive. A noteworthy feature is the section dealing with the use of the x-ray in the treatment of epithelioma of the skin, of the face, etc., in which the author thinks it is the most satisfactory therapeusis for growths about the nose, cheeks, and eyelids where glands do not need removing as in cancer of the lip.

The book is attractive and makes a good working text book for any one interested in medical electricity.

PEDIATRICS

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EDITORIAL

CARDIAC DISEASES IN INFANCY AND CHILDHOOD

Heart disease as it appears in children presents many peculiarities which may readily mislead those who have seen it only in the adult. Like chorea and rheumatism it is far more common in girls than in boys. It develops between the fifth and fifteenth year with greater frequency than at any other period of life. That a cardiac lesion may follow an attack of measles, diphtheria, or scarlatina, especially if renal symptoms are present cannot be doubted. The most recent investigations, however, furnish additional proof that in the vast majority of cases the exciting cause is rheumatism. The symptoms of rheumatism are often very obscure, consisting perhaps of slight swelling of a joint with stiffness and pain or simply of the so-called growing pains. We have seen a permanent mitral murmur develop during an attack of torticollis in a previously healthy child of rheumatic parentage. A cardiac murmur frequently appears during the course of chorea. As it sometimes disappears as the choretic symptoms subside it was formerly believed that such a murmur might be functional in character. More extended investigation shows that this is very rarely the case. It is, as a rule, perhaps, always organic. It is true that the murmur accompanying chorea sometimes disappears, but if such cases are kept under observation it will be found that in a considerable number the abnormal sounds reappear after the lapse of a few weeks or months. There is strong ground for the belief that chorea complicated by endocarditis is always rheumatic chorea, and that the endocarditis is in fact an expression of rheumatism rather than of chorea.

The symptoms of heart disease in children are often obscure and in many cases are for long periods entirely wanting. Dyspnoea and palpitation are the most common. Actual pain is rare, but slight palpitation or tumultous action with præcordial distress is frequently seen. Pain is more commonly associated with mitral stenosis than with any other form of chronic cardiac disease. Odema and cyanosis are extremely rare. Dropsy, cyanosis, tumultous palpitation, praecordial pain and extreme dyspnoea, a combination of symptoms so often seen in the adult, is a rare sight in a child under twelve years. The clinical history of heart disease is divided into three distinct periods—acute inflammation, or endocarditis; compensation or hypertrophy; heart failure or dilatation. These periods are not always clearly defined nor do they always follow in the same order. Complete compensation frequently follows a period of failure of heart power. It is absolutely necessary, however, for the successful management of such cases that these distinctions be constantly borne in mind. All that treatment can accomplish is to establish and maintain compensation. If compensation be perfect already, as it so often is in children, there will be no symptoms whatever of heart disease and nothing to treat. It is highly improper to treat a child for heart disease simply because a murmur has been heard in an examination of the chest. But this does not mean that the physician has no duty towards such a case. The parents should be informed of the condition present and the physician's advice should be sought at the first appearance of anaemia or impaired nutrition. Heart failure may take the place of compensation with surprising rapidity and should be checked at its first appearance. Nutrition should be maintained at the highest possible point; exercise and games should be regulated and intercurrent attacks of illness should receive special attention. The child should be scrupulously guarded against every condition that may tend to precipitate an attack of rheumatism. Upon this point, above all others, the parents should be especially warned, and the mildest attack should receive immediate attention.

THE EVIL EFFECTS OF TOO MUCH EDUCATION WITH THE YOUNG

Complaints are at times made in this country that the health, and particularly the eyesight, of children, is permanently injured by a too close application to the desk. However, the lot of children at school here is a light and easy one, when compared to that of their juvenile fellow-students in Germany. There, indeed, if report does not speak falsely, the brain work that a young child is expected to get through in a day is sufficient to cause much alarm. In Germany many subjects are taught in the schools which in other countries are included in the university course. German parents are now awakening to the dangers of this cramming system, and are becoming day by day more nervous as to the ultimate result on the physique and stamina of the rising generation. Professor Eulenburg some time ago, in the Deutsche Medicinische Wochenschrift criticizes the hours of work of a celebrated Berlin "gymnasium," where the sixth class has in the week thirty-three lessons. Dr. Eulenburg points out that according to Griesbach the brain of an over-taxed child requires several hours of rest before regaining its normal faculties; and Burgerstein says that boys of twelve years of age require as a rule an interval of several minutes after forty minutes devotion to study. Although there is no country in the world where the young are subjected to such brain pressure in the schools as Germany, yet the trend of modern education both here and in England, points the same way. The worst feature of the case is that young children are not only compelled to learn an enormous quantity of subjects, but also so many useless ones. Elementary schools should teach nothing but elementary subjects. It certainly seems that the results of modern education are in no way commensurate with the trouble and expense incurred.

THE HEALTHFULNESS OF CRYING FOR INFANTS

A "good cry" is an expression often made use of, and at first sight it seems decidedly misapplied, but upon a little consideration it will be allowed that after all in many instances it is not an inappropriate term. Of course, crying is usually associated in one's mind with grief or pain, although even when such is the case, crying is a relief and thus does good. There are many occasions, however, when crying, and violent crying, is of the most decided benefit to children. In reference to this, the Hospital says: "In children a great change takes place during crying in the manner in which the respiration is carried on. Expirations are prolonged sometimes for as much as half a minute, and are interrupted by short inspirations. During expiration. the glottis is contracted so that intrapulmonary pressure rises considerably, and there can be but little doubt that it is the equal distribution of this increased air pressure throughout the whole of the chest leading to dilation of portions of the lung that have become more or less collapsed, that is the explanation of the great benefit which often results from crying in cases of infantile bronchitis, and of the large discharge of bronchial mucus which so often follows. Children may become very blue during the paroxysm, but the deep respirations, which succeed quickly, restore the circulation to a better condition than before in consequence of the large lung space available. It might be added, that in cases of empyema, too, when pus has collected, that if a child when being operated on cries it is a great help towards getting rid of the purulent matter.

PEDIATRICS

ORIGINAL ARTICLES

(1) CHRONIC APPENDICITIS*
(2) ANEURISM OF ABDOMINAL AORTA*

BY C. B. SPALDING, M.D., F.A.C.S.
Louisville, Ky.

The following cases seem of sufficient interest to warrant their being placed upon record. The first is a case of chronic appendicitis, in which complications of an unusual nature were encountered following the primary operation. In the second case the pre-operative diagnosis was erroneous, and the pathology found at operation was distinctly irremediable.

Case I.—There was recently brought to me from the mountains of Virginia a boy about eighteen years of age who had then suffered seven days with an attack of appendicitis. According to the history obtained there had been several previous attacks, none of them lasting more than thirty-six hours. Examination showed considerable rigidity of the abdominal muscles, with a mass the size of a goose egg in the right lower abdominal quadrant. The patient's temperature was about 99 degrees F., pulse and respirations normal.

Celiotomy: Right rectus incision disclosed an immense appendiceal abscess capped by the omentum which was opened with the index finger and a large rubber tube inserted. It was a typical chronic abscess in the evacuation of which several fecal concretions were discharged. Opening and draining were accomplished without disturbing the surrounding adhesions to the peritoneal wall. No attempt was made to locate the appendix.

At the end of a week, and after the drainage tube had been removed, it was noted that the right rectus muscle at its lower insertion was still rigid, in fact rigidity had continued since the operation. After a week had elapsed muscular rigidity gradually increased, and distension slowly appeared in that area, extending downward into the right pelvis. In the meantime, however, the patient felt well, his pulse was normal, temperature 99 degrees to 100 degrees F.

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*Clinical Report before the Society of Physicians and Surgeons, of Louisville, Ky.

There was little change in the situation for two weeks, but two or three days later a marked change occurred. At my regular morning call an enormous mass was noted in the right pelvis. The patient was taken to the operating room, and under gas-oxygen anesthesia a finger was introduced through the old sinus, and following the peritoneal wall underneath the mass a gallon of pus was liberated from the pelvis. I am quite sure this second abscess was the result of accumulated serum which had drained into the pelvis prior to the original operation, and becoming infected, this secondary abscess was the logical result. The abscess cavity was drained by means of two large rubber tubes, a large quantity of pus being discharged. Upon one occasion a few days later it was thought gas escaped from the wound. I was not certain about this because the wound was being irrigated at the time, and the gas might have been thus introduced. The nurse said she thought she had seen a little fecal matter at one time, but I was unable to find any. The boy has become greatly emaciated, is constantly nauseated, vomits frequently, and of course, is able to eat little.

Four days ago, or just three weeks after the original operation, a round worm (ascaris lumbricoides) nine inches long was discharged through the drainage tract. The patient was given ordinary "worm medicines" and two days later a large worm passed per rectum, and another one escaped from the wound last night. Obviously, the explanation is that ulceration of the intestinal wall produced a small fecal fistula through which the worms escaped into the abscess cavity, and this has also caused continuance of the suppuration. What will be the ultimate outcome I do not know. The boy feels comfortable, pain is slight, he sleeps well, his temperature is normal, and his pulse between 90 and 100. His emaciation is extreme because nausea has continued and he is unable to eat. The abdomen is hard over the suppurating sinus. Inquiry develops the fact that this boy has previously passed many round worms with the feces, occasionally two or three at a time. He says that he "has had worms since his earliest recollection."

The features of greatest interest to me were: (a) the secondary abscess formation, and (b) ulceration through the intestinal wall which permitted the round worms to escape into the cavity. I do not believe the worms had anything to do with development of the various attacks of appendicitis from which the patient had suffered. In the original operation no effort was made to find the appendix, the abscess was simply opened and a tube inserted for drainage. Had an attempt been made to locate the appendix by separating the adhesions, I would have felt in some measure responsible for the secondary pelvic abscess. The adhesions were not separated nor the abdominal viscera disturbed. Evidently the accumulation of serum, which later became infected, caused the rectus muscle to remain rigid after the original operation.

Case II.—The second patient was operated upon at the Louisville Public Hospital this afternoon (December 16th, 1915). A young negro was admitted to the hospital yesterday morning with the diagnosis of appendicitis made by one of the city physicians. There was considerable tenderness and distension in the right lower abdominal quadrant, especially over the insertion of the right rectus muscle, but no especial rigidity. Yesterday afternoon the patient's temperature was normal, pulse 80, and as there seemed no urgent necessity for immediate operative intervention, he was placed in the observation ward.

Upon physical examination enlarged lymphatic glands were noted in both inguinal regions, and anamnesis developed the history of syphilis contracted six years ago. There were no other symptoms of lues present, and no information was obtained as to the treatment which had been employed.

This morning the abdominal distension had markedly increased, the patient's temperature was 100 degrees F., and pulse 110. While there appeared some question as to correctness of the diagnosis of appendicitis, there was sufficient evidence of pathology in the right lower abdominal quadrant to justify surgical intervention, and we decided to operate this afternoon.

Celiotomy revealed a pulsating mass the size of a grape fruit involving the lower portion of the abdominal aorta and extending downward along both iliac arteries. Post-operative diagnosis, an immense aneurism at the bifurcation of the abdominal aorta. The abdomen was closed without further manipulation. Of course the prognosis is unfavorable.

THE CITRATED WHOLE-MILK METHOD IN THE FEEDING OF INFANTS

BY ERIC PRITCHARD, M.A., M.D., M.R.C.P.
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Before discussing this question I would like to make it perfectly clear that I hold no brief for any particular kind of food. On the other hand, I have very deep-rooted convictions that the principles of "physiological feeding," or the adaptation of the food to the individual requirements of each particular child, must be the basis of every sound method of feeding.

I have been prompted to write this article after reading Dr. Vining's extremely interesting plea for the use of "citrated whole-milk," which was published last year in the November number of The Practitioner. In the main, I agree with him, that it is a method which gives good results, but my contention is that it does not give the best results.

Some eight years ago, when Dr. Ronald Carter accepted the post of medical officer to a new Infant Consultation Centre in Kensington, I represented to him that extremely interesting light might be thrown on the value of the "citrated whole-milk" method if he were, for a time at least, to use this method exclusively in the feeding of the large number of infants which it was anticipated would attend this centre. The results which he obtained proved that it was a good, simple, and generally satisfactory method for general use among the poor. As it happens, I met Dr. Carter a few days ago, and he now tells me that he has abandoned the exclusive use of this method, and, at the present time, employs methods which involve principles of greater elasticity. I am very glad that we have on record Dr. Carter's experiences with the "whole milk" method, for it is difficult to judge of the possibilities of any system of feeding, unless considerable opportunity is afforded for

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*The Practitioner.

manipulating it, as far as its limitations allow, to the varying requirements of a large number of different infants.

In my own Infant Consultation in Marylebone, where I have a large number of students to teach, I have thought it unwise to confine myself to any one particular kind of food, or any one particular method of feeding, and, among other methods I occasionally use the "citrated whole-milk" method, chiefly, however, for the purpose of demonstration.

After many years experience, I have come to the conclusion that provided one is familiar with the principles of physiological feeding, it makes very little difference what food one employs; whether, for instance, one uses dairy milk so-called, dried milk, condensed milk, or even milk synthesized from its independent elements. The essential conditions are as follows:

(1) That the necessary elements for growth, maintenance, heat-production, energy-production, and the elaboration of secretions are supplied in the proportions, and in the quantities required in each particular case.

(2) That these elements are presented in a form capable of being digested and assimilated, and otherwise suited to the specific physiological make-up of the infant to whom they are supplied.

(3) That the food is of such a nature as to exercise and develop the latent digestive capacities preparatory to a more extensive dietary.

Each individual, young or old, has his own specific physiological make-up, a make-up which depends on an enormous number of varying conditions, which include racial, hereditary, familial, and individual idiosyncracies, the latter consisting of tendencies or habits to digest, absorb, metabolize, secrete and excrete in some particular way. These idiosyncracies must be humored by corresponding adaptations in the diet, if the best results are to be obtained, unless, indeed, we can rely on the possibility of modifying the infant to the specific qualities of the food which we supply. This is where, I think, my views differ from those of Dr. Vining. He believes, if I mistake not, that one can so modify the specific physiological make-up of the average infant, that the latter can be made to subsist on the dietary which Nature has ordained should be the food of the calf. Whereas I claim that a large number of infants will refuse to be modified, and die before they submit.

It is not very difficult, by calorimetric and metabolism experiments, to calculate the caloric value of the food which must be supplied to any particular living organism, be it animal, man, or child, to enable it to perform the necessary functions of life, which include growth, maintenance, heat and energy production, secretion, and excretion. These calculations have repeatedly been made in the case of infants by Rubner and other physiologists. But although I am very much inclined to suspect the complete accuracy of their results, chiefly because they have not sufficiently taken into account the determining factors of external temperatures, clothing, muscular movements, and metabolic habits, yet, none the less, I think we may say fairly confidently that, for any given baby, we can approximately estimate the food requirements in terms of calories and on a basis of weight and age.

Thus, we know approximately that, taking an average baby three months of age and 10 lbs. in weight, the requirements for the 24 hours will be an amount of food which yields 495 calories. This calculation is made on the basis that about 94 calories are required for every kilogram of body weight.

The question now arises, is it of importance, from the point of view of the specific physiological make-up of the infant, in what manner this food is presented? Does it matter, for instance, whether we supply food yielding this number of calories in the form of pure protein, pure carbohydrate, or pure fat? Common-sense tells us that since the food has to supply the material for growth as well as for energy and heat production, the food must at least contain some protein elements. We know further that fat, which has a high caloric value, is well suited to the purposes of heat production, and experience tells us that carbohydrates are well suited for energy production. Therefore, on a priori grounds, we must conclude that, apart from other reasons, a mixed diet of proteins, carbohydrates, and fats would be a better diet for a growing baby than one consisting of any one of the proximate principles without the others, or in double combination. Having made this admission, let us next enquire whether any special combination arranged in any particular proportion would be better than any other.

One must suppose that, as the result of millions of years of experimentation, Nature has provided each variety of mammal with the combination of these elements in its own milk, which is best suited to the physiological make-up of its own particular young. The milk of the dolphin contains 47 per cent of fat as compared with about 3:5 per cent in human milk, because to maintain bodily heat of a young animal swimming about in icy cold water a large quantity of food with a high calorie value is required. The milk of the rabbit contains 10 per cent protein as compared with 1.5 per cent in human milk, because the young rabbit grows extremely rapidly, and requires a considerable quantity of a nitrogen-yielding food for this purpose. And so on through the whole series of mammals.

In human milk, the proteins, the fats, and the sugars, are in the proportion of 1.5, 4, and 6.5 respectively, because this combination is best adapted to the physiological "make-up" of the infant; namely, to its functions of digestion, absorption, metabolism, secretion, etc., as well as to the conditions of the temperature to which it is normally exposed, and to its habits of muscular exercise and all those events which make up the sum total of its daily experiences. In cow's milk, the proportions are 4, 3.5, and 4.5 respectively. In this connection, I would point out that Dr. Vining's figures, with regard to the relative proportions of the various elements—proteins, fats, and carbohydrates—in cow's milk and human milk respectively, are incorrect. He says the difference between the amount of lactose in the two varieties is only 10 per cent. I should say, making full allowance for discrepancies between different analysis. that 25 per cent was nearer the truth. As regards the protein, made up of caseinogen and lactalbumen, he says the difference is something less than 10 per cent, if he had said 100 or even 150 per cent, he would have been nearer the mark. On the basis of this reputed similarity in the chemical make-up of the two milks, a similarity which does not exist, he disposes of the central argument against the substitution of the one milk for the other in the feeding of young mammals, or the use of whole milk for infant-feeding.

If, therefore, we wish to adapt the food to the physiological requirements in feeding our three months' old baby, we should supply the food which is to yield the 495 calories in a form which contains the proteins, the fats, and the carbohydrates in the proportion of 1.5, 3.5, 6.5. In other words, we should give:

.375 oz. of casein,
1. oz. of fat,
1.6 oz. of sugar.

It is not, however, enough that the food supplied should be compounded of the above elements and in the above proportions. It is requisite, too, that these elements should be presented in a form capable of being tolerated by the stomach and intestines, and of being digested. This brings me to the question of dilution. I do not think it is possible to exaggerate the importance of the size or bulk of the individual feeds given to young infants. I believe, figuratively speaking, that infants are often drowned in the excess of water with which the food elements are diluted, and that in the limited quantity of water which the "whole-milk" method implies, is to be discovered the secret of its success. We have become so accustomed to think and to speak in terms of percentages, as far as the protein, fat, and carbohydrate elements are concerned, that we are apt to forget about the water. As long as these main food elements are supplied in quantities which correspond with the physiological requirements of nutrition, it is, in my opinion, a matter of very little importance from the nutritive point of view how much or how little water they are supplied with; from the point of view, however, of the behaviour of the stomach or intestines, and, perhaps, too, from the point of view of the circulatory and excretory organs, the degree of dilution may make all the difference. For instance, I often find that when the motor functions of the stomach are disorganized in infants, a very common condition, which may be proved by the Bismuth meal and the X-ray screen, they will tolerate small quantities of food in very concentrated form, when the same food elements given with a large amount of water may cause considerable disturbances.

In certain cases, I have given condensed milk in its native form, without any water at all, with the most excellent results. In others I have employed dried milk, diluted with half the amount of water necessary to restore it to the strength of ordinary undiluted cow's milk.

I do not believe that the fat and sugar dyspepsias, which are so common in infancy, are often due to excessive "percentages" of cream or soluble carbohydrates. These dyspepsias occur because the total amount of these elements supplied in the 24 hours, or any other unit of time, is more than the organism can accommodate. Nor do I believe that caseinogen, even when given in very high percentages, provided it does not coagulate in a heavy clot, is calculated as a rule to cause any disturbance of digestion.

I have on many occasions given sanatogen, or its equivalent (caseinogen and glycero-phosphate of calcium), as well as whey proteins, casumen, and other forms of casein in 5, 6, or 7 per cent strength, without any disturbances of digestion. But a daily total of casein, of fat, or of whey, given in excess for any long-continued period of time, is quite certain to result in the breakdown of the digestive processes, which happens to be the weakest, or on which the incidence of the injury most acutely falls. I regard these dyspeptic phenomena as manifestations of the calling into play of protective mechanisms. It is the duty of the physician to interpret the meaning of these so-called pathological manifestations, and to modify the food in accordance with his findings. I cannot believe that he can acquire the necessary experiences to do so correctly, if his practice is confined to one method of feeding, nor that it is possible to find the antidote to the evils he discovers, unless he has a large number of resources at command.

The method of "percentage feeding" has been subjected to much adverse criticisms, chiefly by people who have not understood the significance of the term. Without it, however, it is impossible to write out with any degree of accuracy the formulary for the preparation of any food or milk mixture, so as to comply with any quantitative or qualitative requirements. With familiarity with its usage it is quite easy to discover the weak spot of any mixture, no matter of what constituents it may be compounded, and to correct the error. On a percentage basis, it is little more difficult to employ the top-milk method than to prepare a mixture of any required percentage composition by combination of milk, cream, sugar, and water, or by combination of pure casein, butter fat, lactose, salts, etc. But it is almost impossible for a physician who confines himself to one method, let us say the "citrated whole-milk" method, to criticize the weaknesses of other methods which have failed in particular instances. I do not think that those to whom the limits of dietetic treatment are circumscribed by the restrictions of a single method are likely to possess the resourcefulness which is so requisite for solving feeding problems.

With respect to the choice of the protein element which should be supplied to infants, it is important that we should remember the recent work of Emil Fischer with regard to the chemical constitution of the various bodily tissues for the development of which, in the growing infant, building material must be provided. It has been shown by this investigator that each tissue has its own specific make-up, and that for its development certain definite bricks or building material are required in a correct proportion. These bricks are amino-acids (peptides), or chains of amino acids (polypeptides), grouped together in ester combinations or piperazine rings. Can these bricks be obtained equally well from all varieties of proteins? No, certainly not. For instance, the human baby would find it exceedingly difficult or impossible to obtain all the bricks necessary for building purposes from a vegetable protein. The protein, which, when broken down into separate bricks by the processes of digestion, best fulfils the required conditions, is the protein, or proteins, contained in its mother's milk. The proteins of cow's milk also contain the required elements, but probably not in so economical a form. If mixed proteins are given, it is improbable that any required kind or shape of brick will be absent, but some may be present in unnecessary excess, and cause trouble from this cause. Problems in connection with this side of development are numerous and difficult.

Then, again, there are other problems associated with the presence in the food of certain indefinite bodies, which have an influence on nutrition totally out of proportion to their bulk, and which, for want of a better name, have been called vitamines. These bodies, whatever be their function, appear to be essential to good nutrition, and, if not present in the staple or routine dietary, must be supplied independently in some other form.

These, and many other points of difficulty, arise in connection with the feeding of infants, but it is a great mistake to imagine that these dietetic problems can be settled by formula. It has, indeed, been suggested that competent authorities should formulate a standard dietary for the feeding of infants, which should be universally employed, irrespective of the individual idiosyncracies of the child. The Association of Infant Welfare and Maternity Centres is bombarded with such requests. This Association, to which some 300 local centres are affiliated, and which may be considered to be their mouthpiece and central authority, has constantly refused to draw up any such formulary, for it conceives that the main use of Infant Consultation Centres is to afford expert assistance in cases in which the feeding requires individual adaptation.

As long as infants refuse to conform to standard, it is impossible to standardize their food. There can be no master antidote for, or universal prophylactic against one and every variety of digestive, assimilative, metabolic, secretory and excretory defect which is liable to occur in infants, and which is very largely dependent on food causes. For this reason, I do not believe that there can be such a thing as a "best" food for infants; the best food for each individual infant is that which is best adapted to its general physiological make-up, and it will be different in each case. If expert advice cannot be procured to decide what is the "best" food for any particular case, it may be necessary to fall back upon some food which practical experience shows is likely to do least injury in the largest number of cases, and which is easy and simple to use. With the multiplication of Infant Consultations the instances in which feeding by formula must be resorted to are likely to become fewer and fewer. I think, however, it would be a most retrogressive step to legislate for such a poor standard as feeding by formula requires, far more profitable to devote our energies to the spread of a better knowledge. Dr. Vining says: "Few of us have time or patience to wade through this multitude of detail"—i. e., the detail necessary for understanding the quantitative compounding of the food. For my part, I think that the importance of the subject justifies the expenditure of just as much time and patience as may be required to acquire the necessary degree of knowledge. If those to whom the public, and, in certain cases, the profession, look for light and guidance in these matters, say that the details of accurate modification are too difficult to understand, it is quite certain that the control and management of infant feeding will pass out of the hands of medical men into those of nurses and health visitors, many of whom are now making a serious study of the subject, and who have both the time and patience to master the details.

In connection with the use of dried milk, Dr. Vining says: "It is a pity the profession should have given the dried milk so much support," and he proceeds to found his objections to its use on the grounds of bacterial contamination. It is quite true that many brands of dried milk, and those which most closely resemble fresh milk, are not bacteria-free, but even in this respect they have the advantage of dairy milk of the best quality obtainable. Very few dairy milks, however carefully handled, contain a lower bacterial count than 8,000 bacteria per c. c., and such milk would cost about eightpence per quart. An average sample of dried milk, desiccated by the most scientific method, i. e., the Bevenot-de-Neveu process, contains from 4,000 to 10,000 bacteria per gramme weight. In other words, when reconstructed with sterile water, it will only contain from 500 to 1,200 bacteria per c. c.

Judged on the criterion of bacterial impurity, the best dairy milk is eight times as impure as an average sample of dried milk. If Dr. Vining has any doubts about the safety of giving such a dried milk to a young infant, there is absolutely no reason why he should not have the reconstructed milk boiled or scalded in the same way that he advises dairy milk should be boiled or scalded before it is administered to the infant. I think, however, that if Dr. Vining will read Dr. S. Delepine's report to the Local Government Board upon "the effects of certain condensing and drying processes used in the preservation of milk upon its bacterial contents" (Food Reports, No. 21, 1914), he will have no further anxieties on this score.

I have had a long experience of the use of dried milks in the feeding of infants, and I can safely say that they give very good results, when used with discrimination. But, in my opinion, the same objection holds to their use when diluted with water as holds in the case of "whole milk." If dried milk is reconstituted with eight parts of water, we return to the condition of whole milk, and if we attempt to feed an infant on such a food, we presuppose that a baby's digestive, assimilative, metabolic, and excretory functions are the same as those of a calf. To use dried milk to the best advantage it must be modified to the special requirements of each infant, or, at least, to the standard of human milk.

The conclusions, then, at which I arrive, are, firstly, that the "citrated whole-milk" method is physiologically unsound, because it allows no latitude for adaptation to the individual's digestive, assimilative, metabolic, and secretory activities, and that its use imposes obligatory modification of the infant. Secondly, that it affords little scope for the study of the influence of variations in the diet. Thirdly, that if the principles of percentage feeding are understood, a satisfactory food can be synthesized in a great variety of ways to satisfy the physiological requirements of any particular child; and, fourthly, that dried milk, if properly modified and of good quality, has all the advantages, and few of the disadvantages, of so-called dairy milk.

THE USE OF UNDILUTED CITRATED MILK IN THE FEEDING OF INFANTS*

BY RONALD CARTER, M.D., M.R.C.S., L.R.C.P.
Physician to Infant Consultations, North Kensington

During the last eight years, I have had considerable experience in the use of undiluted citrated milk at my Infant Consultations in North Kensington. When I commenced this work I found that the mothers did not realize the importance of measuring the quantities of food that they were giving to their babies, so that all elaborate mixtures had small chance of success. Professor Budin's experiment in Paris with undiluted sterilized milk prompted me to try a similar experiment in Kensington, substituting citrate of soda for the process of sterilization. In both instances, clotting of the milk is prevented. I followed his directions with regard to the quantity of milk to be given, viz., one-tenth of the body-weight, but I soon found that the general condition of the child was a better guide than the body-weight as to quantity, and that it was always safest to begin with small amounts, and gradually increase. Another point I found of great importance, was to insist on clock-like regularity of feeding, and to make the intervals between the feeds as long as possible, so that the stomach was empty before the next meal. In order to ensure regularity, it was necessary to write down the times of feeding on a card, which was handed to the mother, or whoever was in charge of the child.

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*The Practitioner.

Contrary to the generally accepted method of giving two grains of citrate of soda to each ounce of milk, I gave only one grain, and this was usually sufficient. I told the mother to add another grain if vomiting occurred. No specially prepared milk was used. I instructed the mothers to receive the milk in a clean jug, and then to place the jug in a saucepan of water, and allow the water to boil for five minutes. It is important that the milk itself should not be placed in a saucepan and boiled, because the "family saucepan" has a great deal of work to do in the houses of the poor and can rarely be called clean. After the heating process, I advised that the jug should be covered over with a piece of muslin or clean paper, and the edges bound round with string; the jug now should be placed in a basin of cold water until required for use.

Each meal was prepared separately, and I found that this had a most excellent educational influence. Women, who formerly had never thought of looking at the marks on the feeding bottles, or at any other form of measurement, now became interested, and for the first time in their lives realized the importance of quantities. I merely mention these details to show how difficult our work is among the poor and ignorant, whatever form of feeding is adopted, and I used whole citrated milk quite as much for the benefit of the mother as for the child. The value of this lesson has been fully justified in the case of many young mothers, whose subsequent babies progressed better than the first, because the mothers were able to carry out more elaborate formulae, which, in many instances, produced better results than the whole-milk process. There can be no doubt that I got good results, on the whole, with undiluted citrated milk when I used it as a routine method during the first two or three years, but I have got much better results during the last six years by abandoning all routine methods and concentrating more on the individual requirements of each case.

The most successful cases of feeding on whole milk occurred among wasted infants, and this is rather what one would expect. These cases had mostly been fed on very dilute mixtures, often containing no additional fat or sugar, they suffered from dilated stomachs, accompanied by vomiting and diarrhoea. The citrated milk, on account of its small bulk, is particularly suitable in these conditions, and the excess of proteid can, no doubt, readily be utilized by the tissues for building up the framework of the body in cases of starvation. It is certainly a remarkable fact that the digestion of a weakly child is able to deal with whole milk, when all clot formation is prevented by the addition of citrate of soda.

I was not, however, satisfied that these good results were entirely due to whole milk feeding, so I arranged to feed another series of wasted infants on mixtures of varying amounts of cow's milk, water, sugar of milk, and a "cream solution" consisting of equal parts of linseed oil and lime water. In this latter series of cases I paid especial attention to the intelligence of the mother. The exact amount of each constituent was carefully explained to her, and, in addition, the composition of each feed, and the times for feeding were written down on a card, which she took home with her.

At the next and subsequent weekly visits, the mother was cross-examined with regard to the quantities which she put into each bottle. It was evident that, when the child progressed, the mother took an increasing interest in the variations of each constituent of the diet, because she saw that it "paid."

I included 30 cases in each group, and they were under observation for three months. All the babies were young, and the general environment was very similar in both groups.

On comparing the results of these two groups, I found that the whole-milk feeding produced a more rapid rise in weight than the diluted milk feeding. In three instances, the rise in weight of one pound a week was alarming, and I found that the mothers had not been attending regularly, and had increased the food without advice, with the result that in two cases the children became very ill, but did not die.

The weight curve in the diluted milk series showed a more gradual rise, and the babies did not have any violent upset. The muscular development showed good progress in both groups among those who attended regularly, but here, again, the muscles showed a more rapid increase in the whole-milk babies.

I saw some of these cases when they were 18 months old, and there were no signs of rickets in either group. Another difference was, that the whole-milk infants were sooner satisfied than the others. I may add that these observations were made in the winter months. In hot weather, I have often had bad results, both with whole citrated and with dilute, milk mixtures. I believe it is impossible to keep the milk from becoming contaminated in the home during the summer time, and therefore I put all the children on a dried full cream milk, while the warm weather lasts. This plan has been most successful, and it has had a marked effect in diminishing the death-rate of the infants attending the Consultations; this, however, is not the only result, for it has also reduced the sickness rate. The dried milk is sold at cost price to the mothers, and, practically, it proves to be a little cheaper than cow's milk, because there is no waste. I note that advocates of whole-milk feeding are agreed that it should be stopped in cases of summer diarrhoea, but, surely, it would be better to eliminate whole citrated milk altogether from the diet at the commencement of the warm season rather than to run so great risk. In the case of large towns, I consider this risk to be a great disadvantage to the routine use of citrated milk.

When constipation occurs in whole-milk feeding it can often be relieved by increasing the amount of milk. If, however, as sometimes happens, the milk is increased to the utmost degree of tolerance, and still the constipation is not relieved, we have a condition produced which is much more obstinate than in any other form of feeding. I find that in these cases it is better to change the diet rather than to give large doses of paraffin.

I should like to mention another condition, in which whole milk often accentuates a tendency to constipation. When inquiring into the history of a case it is not at all uncommon to hear that the child received a dose of castor oil on the third day of life, and that in order to overcome the resulting constipation, subsequent doses of one teaspoonful were given every three days, for a month or more. The injury which results from this drastic treatment must be repaired before the bowel can recover its normal function, and I do not find that whole milk is a suitable food in these cases, until the tendency to constipation, which is a natural sequel to this form of injury, has been cured.

When a child has been fed on diluted cow's milk during the first fortnight of life, has never had breast milk at all, and there has been no attempt to imitate the colostrum period, there is usually an intolerance for cow's milk, and these cases are seldom suitable for whole-milk feeding.

It is a curious fact that during the last few years I have seen far fewer cases of wasting than I did formerly. The excellent system of visiting, both official and voluntary, under the Notification of Births Act, has enabled us to give advice on questions relating to diet and general hygiene at the earliest possible moment. The mothers in the neighborhood are now willing to have their children under medical supervision in order to keep them well. I see a large number of breast-fed infants who are not progressing favorably, and it is most important in these cases to find out the cause. Women are often told by their friends, and even medical men, to put the child on the bottle "as the breast milk does not suit it." In cases in which it is merely a question of insufficient supply, small supplementary feeds of cow's milk, diluted or undiluted, given directly after the breast is all that is required, and the mother can continue to feed her child in this manner for many months. As the breast milk diminishes, so the quantity of cow's milk should be increased, and in this way the child passes through the weaning period with no trouble.

The other day I saw a case of a child who was being fed on cow's milk, and doing badly; the mother had been told to discontinue breast-feeding, as the infant was not satisfied, so for six weeks she had given it no breast milk. I at once put the child to the breast, and found, by weighing before and after the feed, that it had obtained 2½ ounces. I told the mother to persevere with the breast feeding, and to give small quantities of dried milk, one teaspoonful to three tablespoonfuls of water after each breast feed. The child did remarkably well. At the present moment the great majority of infants are being fed on this combined method. I feel sure that if this plan were more generally adopted by the profession, artificial feeding, with all its attendant dangers, would not be so frequent. It is of the greatest importance to make full use of every ounce of breast milk, even when most of the diet has to be artificial. Infants do better when they have variety in their diet, and for this reason we cannot get the best results on any routine method of feeding. At these regular weekly Consultations the physician has a greater opportunity of studying the effect of a particular diet than at a hospital outpatient department, where the attendance is often very irregural. I have often been struck by the fact that, when a child has been fed on the same diet for some months, a stage is reached when no progres takes place until some variety in the food is introduced. It seems to me that a physician who is in charge of an Infant Consultation should make himself acquainted with every possible mode of feeding.

PROPER FOOD FOR YOUNG CHILDREN

BY CAROLINE L. HAUT
Washington, D. C.

Simple bills of fare, helpful recipes, and practical directions for the preparation of foods for children between three and six years of age are contained in Farmers' Bulletin 717, "Food for Young Children," just issued by the U. S. Department of Agriculture. The bulletin, which was written by Caroline L. Hunt, under the direction of Dr. C. F. Langworthy, Chief of the Office of Home Economics, is easy to understand and should be helpful to mothers who are trying so to care for their children that they will grow up into stalwart and efficient men and women. It is issued at this time as a co-operative contribution to the "Baby Week" campaign conducted by the Children's Bureau of the U. S. Department of Labor.

The author has carefully avoided the use of all technical dietary terms or systems of grouping and has so classified foods that any mother can meet the following definition of a satisfactory diet for a little child:

"A little child 3 to 6 years of age who is carefully fed in accordance with his bodily needs (as these are now understood) receives every day at least one food from each of the following groups:

1. Milk and dishes made chiefly of milk (most important of the group as regards children's diet); meats, fish, poultry, eggs, and meat substitutes.
2. Bread and other cereal foods.
3. Butter and other wholesome fats.
4. Vegetables and fruits.
5. Simple sweets."

The relation of food to the condition of the bowels is also an important matter. Grains, particularly those containing the outer or branny layers or coats, are laxative; so, too, are such mildly acid fruits as apples, oranges, and grapefruit. So far, therefore, as the important matter of preventing constipation is concerned, coarse grains and mildly acid fruits serve the same purpose. When fruits are to be obtained in abundance, the kind of cereal served is not of great importance. When they are not, the coarser cereals should be used.

A Quart of Milk a Day

The basis of a child's diet should be clean whole-milk—at least a quart a day. Such milk, in addition to water, contains about half a cupful of the very best food substances—butterfat, milk sugar, lime, and other materials needed by the child to make muscle, bones, and teeth. In addition, milk contains a substance thought to promote growth by helping the body make good use of other foods. Where good whole-milk is not obtainable, clean, fresh skim milk supplies these substances with the exception of the butterfat, and is, of course, preferable to dirty or questionable whole milk. Milk, however, contains very little iron and therefore spinach and other green vegetables and egg yolks, which are rich in iron, combine well with milk.

The child should drink the milk with the chill taken off, or should consume his full quart a day with cereals and in milk toast, cocoa, milk soups and stews, in cereal puddings, egg-and-milk puddings, custards, junkets, or simple ice creams. Milk stews may be made with vegetables or fish, or to vary the diet these things can be combined with cream sauce and served on milk toast. The bulletin therefore gives a large number of recipes for the preparation of various milk dishes which will help children consume the requisite amount of milk without growing tired of this valuable food. Those for milk soup will be found particularly useful, as they give the mother an easy means of preparing many vegetables which are essentials in the child's diet.

Bread and Cereals

Well-baked bread and thoroughly cooked breakfast cereals are both good for children and with milk should make up a large part of the diet Bread and cereal mushes are to a certain extent interchangeable, but neither can take the place of milk, meat, eggs, fruits and vegetables. An ordinary slice of bread is equal in food value to about half a cupful of boiled or steamed cereal and about a cupful of flaked or puffed cereal. Different kinds of bread may be used for variety.

The yeast-raised bread given to young children should be at least a day old or should be toasted or twice baked. Hot breads are likely to be swallowed in large pieces and are, therefore, not desirable. Hot breads which are almost all crust, like thin tea biscuits or crisp rolls, are best of the hot varieties.

Meat, Fish, and Eggs

Under the heading, "Meat, Fish, Poultry, Eggs, and Meat Substitutes," the author states: "In some families children do not get enough meat and eggs; in others they get too much. A good general rule commonly followed is to give a child 2 years old or over an egg every other day and about the same amount (2 ounces) of meat, fish, or poultry on the intervening days. Where meat is omitted, care must be taken to see that other suitable foods take its place—preferably an extra amount of milk and eggs."

Fried meats should not be given to a child, because they are likely to be overcooked and tough and also because the fat may be scorched and thus changed in composition. Scorched fat is almost certain to be hurtful to children.

Meat is best given as broiled chop meat or in simple meat stews combined with vegetables. Poultry may be boiled and served with rice. When roasted, only the tender portions should be fed. Highly seasoned stuffing or rich gravy should not be given to a young child.

Dried and other fish, and oysters, may be used in milk stews. Well-boiled fish is good for variety. Eggs must not be overcooked or they are likely to cause indigestion. The best way to cook eggs is to poach or coddle them. Scrambled eggs may be served occasionally, provided care is taken not to scorch the fat or to overcook the eggs.

Fatty Foods

Fat is an important part of the food of children. There is more than an ounce of fat (at least 2½ level tablespoonfuls) in a quart of whole milk. If the child is given a quart of milk, has butter on his bread, and meat or an egg once a day, he gets enough fat, and that which he receives is in wholesome form. It is well, therefore, not to give such fatty foods as pastry, fried meats and vegetables, and doughnuts or rich cakes. If the child is constipated, the occasional use of cream or salad oil is desirable, for fat in abundance is laxative.

Bacon or salt pork, cut very thin and carefully cooked, may be given occasionally. It is very important not to burn the fat.

Vegetables and Fruits

Vegetables and fruits are grouped together because they are similar in that both supply iron, lime, and other mineral matters, and also mild acids. Vegetables are an important but often a neglected part of the child's diet. They should be served at least once a day, as they help keep the bowels in good condition. Fruits are important for their flavoring, for their laxative effects and doubtless for other reasons, and should be served in some form at least once a day. Fruit juices and the pulp of cooked fruit, baked apples and pears, and stewed prunes, are the safest. The child should not be allowed to eat the skins unless they have been made very tender by cooking.

Simple Sweets

Sugar is a desirable part of the diet provided it is given in simple sweets and not allowed to take the place of other foods and spoil the child's appetite. Simple sweets are such things as lump sugar, maple sugar, sirups, honey, and plain candy, and those foods in which sugar is combined in simple forms with fruit juices (in lemonade, water ice, jelly, etc.), with flour or starch, as in plain cakes (cup cake, sponge cake, cookies), and with fruit, as in jams, marmalades, and similar things.

SOCIETY TRANSACTIONS

THE NEW YORK ACADEMY OF MEDICINE

Section on Pediatrics*

Stated Meeting Held November 11th, 1915

DR. WALTER LESTER CARR, IN THE CHAIR

A Simple Outfit for the Distribution of Diphtheria Toxin.—Dr. Abraham Zingher exhibited the apparatus which the New York City Department of Health is now distributing to the physicians of the city free of charge. Dr. Zingher stated that in a series of 800 children who gave negative reaction to the Schick test, although a considerable number had been exposed to diphtheria, not a single child had developed the disease. They therefore felt confident that a negative reaction meant immunity, while a positive reaction indicated a probable susceptibility to diphtheria. Dr. Zingher said they had been making some experiments as to the duration of immunity after the usual 1000 units of diphtheria antitoxin and had found that the first dose gave an immunity from fourteen to twenty-one days, while a second dose protected only from seven to ten days. They also found that in those naturally immune an immunizing dose produced greater immunity. In their more recent experiments with the toxin antitoxin mixture they had found that an active immunity did not develop immediately or soon enough to be of value in giving immediate protection in the wards where the subject was exposed to the disease, but that many who did not become immune at first later developed immunity.

The outfit presented was devised to furnish a standard amount of undiluted diphtheria toxin, which remained of fairly constant strength when kept in the ice-box, and could be readily diluted when required. In this way they had overcome the difficulty that stood in the way of popularizing the Schick test, since the diluted toxin deteriorates on keeping either in solution or in tablet form. The operator should be skilled in the intracutaneous injection, and should consider all reactions true unless able to distinguish the positive and speudoreactions. The pseudoreactions can generally be distinguished clinically from the true reaction. It appears earlier, is less sharply circumscribed, and usually disappears in from three to four days. It is characterized by a central area of redness of varying size surrounded by a secondary areola. On fading it leaves only a faintly pigmented area, which soon becomes invisible.

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*Amer. Jl. Dis. W & Children.

The outfit for the Schick test consists of a capillary tube and a small rubber bulb, such as are employed in the distribution of vaccine virus, and a bottle containing 10 c. c. of sterile physiologic saline solution (with 0,025 per cent phenol). The capillary tube contains two minimum lethal doses for the guinea pig of undiluted diphtheria toxin. This toxin should not be a freshly prepared lot but should be ripened for at least a year. The capillary glass tubes were filled by means of a 0.25 c. c. record syringe and a fine needle. The ends of the capillary tubes were then sealed in the flame.

In using the contents of the tube, the one end was broken off and pushed carefully through the neck of the rubber bulb until it punctured the diaphragm within, and entered the cavity of the bulb; then the other end of the tube was broken off. By holding the bulb between the thumb and middle finger and placing the index finger over the opening in the larger end of the bulb the toxin was expelled into the saline. The capillary tube should be rinsed out by drawing up saline several times. Then cork the bottle and shake the diluted toxin. Exactly one 0.1 c. c., representing one-fiftieth of the lethal dose for the guinea pig is then injected intracutaneously on the flexor surface of the forearm. The contents of the bottle are sufficient for about eighty tests. On account of the fairly rapid deterioration it is not advisable to use the diluted toxin after about twelve hours. A 1 c. c. record tuberculi syringe and a fine platinum needle (No. 22 Burroughs, Wellcome and Co.), or a steel needle (No. 3 B. W. and Co. are preferred). An ordinary hypodermic syringe, unless graduated to 0.1 c. c., is not satisfactory.

The Chemistry of Cow's Milk and Other Products Used in Infant Feeding.—Professor F. W. Howe of Boston stated that he had very little that was original to present but had endeavored to compile the voluminous literature of his subject in such a way that it would be of practical use to the busy physician. He stated that according to Van Slyke and Bosworth the composition of cow's milk was as follows:

	Percentages
Fats	3.90
Milk sugar	4.90
Protein combined with calcium	3.20
Dicalcium phosphate, $CaHPO4$	0.175
Calcium chloride $CaCl2$	0.119
Monomagnesium phosphate, $MgH4P2O2$	0.103
Sodium citrate	0.222
Potassium citrate	0.052
Dipotassium phosphate	0.23
Total solids	12.901

However, owing to the fact that milk is an animal secretion it is influenced by a number of factors among which are breed, health, the stage of lactation and the feed. Undoubtedly cows become gradually adjusted to changes in feed, but this emphasizes the fact that when cow's milk is to be generally used for infant feeding, if a change in feed needs to be made it should be done gradually. After being drawn from the cow milk is particularly susceptible to changes of various kinds. Its composition may be influenced by physical means, chemical means, bacteriological means or physiological means. The physical composition of milk may be considerably changed as regards odor and flavor by the feeding of strong herbs and vegetables. The color may likewise be affected by the food. Changes in the milk are also affected by manipulation, as by homogenization and heat. In considering the composition of milk as influenced by chemical means the writer confined himself to the action of such substances as physicians were likely to use in practice, such as lactic acid, lime water, sodium bicarbonate, sodium citrate and milk of magnesia. Lactic acid is a product of fermentation of milk sugar, one molecule yielding by hydrolysis one molecule of dextrose and one molecule of galactose. The casein of milk is precipitated in a lactic acid medium. There are about 300 varieties of lactic acid bacilli, and each one exerts its peculiar action on the casein. Lime water and milk of magnesium both have an alkaline reaction and act in a similar manner in retarding the precipitation of casein in the form of paracasein in the stomach by rennin.

They also act in a similar way in that they both make insoluble soaps of the fats. Milk of magnesia also exerts an astringent action on the epithelial cells of the intestine so that it may be used for a laxative. Sodium citrate and sodium bicarbonate act in a similar way in that they both react with casein to form sodium caseinate, a soluble salt, but the bicarbonate, on account of its having an alkaline reaction also forms soluble soaps with the fats in the intestine. As to the influence of bacteria on the composition of milk; this may be divided roughly into fermentative and putrefactive types with possibly a subgrouping of the pathogenic type. According to the work of Kendall and his associates it may be stated almost as a biological axiom that under natural conditions fermentative actions almost invariably precede putrefactive actions. This being true the souring of milk gives a natural danger signal as a warning of what may come later. Concerning the putrefactive types, it must be borne in mind that it is only one step, chemically speaking, from the amino acids, the form in which most of the proteins of milk are absorbed, to the toxins which are produced by these same proteins by the action of certain putrefactive bacteria if the conditions are favorable. In discussing the physiological means by which the composition of milk is influenced the writer reviewed the action of the natural ferments or enzymes and their products, the diastases, galactases, lipases, catalases, peroxdiases and reductases. Each of these had its own specific action on the constituents of milk, fulfilling its function in the part of self digestion. Milk is not a perfect food unless one has a perfect cow and a perfect calf. When we attempt to use this product in infant feeding we need the assistance of all the natural ferments to bring about the optimum assimilation. Under the heading of the chemistry of other food products used in infant feeding, Dr. Howe reviewed the chemistry of milk sugar, malt soup, dextrimaltose, sucrose, dextrose, cereal jellies, protein milk, protein milk plus lactic acid milk, whey, and proprietary foods. As to the cereal jellies, those in most general use were barley and oats, but there seemed no good reason why arrowroot, cornstarch and wheat flour could not at times be used to advantage. In the making of cereal jellies, in order to obtain uniform results, it was desirable to use definite percentages of starch. In speaking of proprietary foods the essayist pointed out that in the nutrition of the infant certain essential food elements were requisite and any proprietary food laying claim to being a complete food must contain these in proper proportion. It was difficult to keep fats in a sweet and wholesome condition for any length of time and while not quite so difficult to keep proteins, it was still no easy matter, hence it was found that most of the proprietary foods were blended carbohydrates in a large measure. Dr. Holt in his book had given the analyses of a number of the most popular proprietary foods which the writer reviewed.

The Digestibility of Cow's Milk Protein and the Use of the Protein Milks.—Dr. L. Emmett Holt stated that while in many respects their ideas of infant nutrition and feeding had been modified by the clinical and laboratory researches of the last ten or fifteen years, in no direction had the change of view been so marked as that regarding the proteins. It was not many years since the difficult digestion of the protein of cow's milk was looked upon as the important, probably the chief cause of their troubles in infant feeding, and many were the expedients resorted to to overcome this difficulty, but they had learned that symptoms formerly ascribed to the proteins depended upon other conditions. The curds in stools are chiefly composed of fat; most of the colic and flatulence are due to carbohydrates, and constipation depends much more on fats and salts than on casein. All researches agree that in practically all conditions pepsine is abundantly secreted. The use of such ferments in disturbances of digestion, though still widely resorted to, has no rational basis. Modern practice has certainly been in the direction of using much higher proportions of protein than were formerly thought wise or safe. Metabolism experiments made at the Babies' Hospital and in many other places have revealed the fact that under almost all circumstances infants possess a remarkable capacity for retaining nitrogen. Even in condition of severe malnutrition the protein of cow's milk is well borne, as shown by a positive nitrogen balance even though the infants were losing weight. Clinical evidence also of the infant's tolerance of protein is not wanting. At present we cannot mention any symptom or group of symptoms which we can positively attribute to the proteins, in the sense that we can attribute definite symptoms to the fats and the carbohydrates. It is pertinent to inquire whether the present practice of giving much higher proteins than formerly is to be recommended without reservation, whether it is safe and advantageous, or whether it is possibly injurious. Taking the composition of mature woman's milk as a guide, we find that it contains 3.5 per cent fat, 7.5 per cent sugar, and 1.25 per cent protein; thus a nursing infant is receiving a little over 7 per cent of his calories in the form of protein; an artificially fed infant taking cow's milk, one-half strength with sufficient sugar added to bring the carbohydrates up to 6 per cent, is receiving over 14 per cent of his calories in proteins. Since woman's milk contains nitrogen in other forms than proteins (extractives, urea, etc.) the available nitrogen is still further decreased, so that the discrepancy between the two forms of milk is even greater than at first appears. The writer said that their own metabolism experiments had shown that with high protein feeding there is at first a marked increase in nitrogen retention, but that this persists for only a short time, and that increased intake is followed by increased excretion which is nearly but not quite proportional. Rubner believes that the excess of protein is burned in the body in the place of carbohydrate and fat, that if taken in excess of the minimal requirement the surplus can be used up in the place of other food elements. Evidence has been brought forward which indicates that the protein of cow's milk when given in considerable excess of the needs of the body may bring about disturbance of metabolism causing clinical symptoms of importance, even of gravity. Experiments made four years ago at the Babies' Hospital showed that large amounts of protein of cow's milk given without whey were regularly followed by definite symptoms, prostration, fever and a leucocytosis, which symptoms ceased immediately upon resuming the ordinary diet. Such symptoms were only seen when protein was given much in excess of the amounts commonly employed. While the various experiments along this line are not conclusive they are strongly suggestive of possible harm from very high protein feeding.

The latest studies of the food proteins indicate that the amount of protein given is much less important than the nature of the protein furnished. Osborne and Mendel have shown that certain amino acids are indispensable for growth, while others are relatively unimportant. Thus if gliadin, a wheat protein, be the form of protein given to an animal, although the animal may maintain its weight, no growth occurs. But, if to this a small amount of one of the amino acids known as lysin is added, without increasing the total protein, a gain in weight begins immediately, but ceases at once if lysin is withheld, and begins again when it is furnished. From many such experiments they have reached the conclusion that lysin is indispensable for growth. There are three other amino acids of great importance, cystin, tryophan and glycocoll. It does not seem possible for normal nutrition to go on unless lysin, trytophan and cystin are furnished in the food. There is good reason for believing that glycocoll can be produced in the body by synthesis. As to the bearing of this on infant feeding, animal proteins are rich in the essential amino acids, while many vegetable proteins are deficient in them. Lactalbumin is one of the animal proteins that contains the essential ones in a largest proportion. Casein, however, is notably deficient in cystin. The deficiencies of casein are ordinarily made good by the amino acids of lactalbumin. In woman's milk the lactalbumin is twice the casein, while in cow's milk it is only one-sixth the casein. It is surely not an accident that woman's milk has nearly twelve times as much lactalbumin as cow's milk. There are good reasons for believing that Nature has not intended the cow's milk to nourish even the calf for a very long period. The maximum secretion of cow's milk is about the middle of the second month, after which it steadily declines; the calf at birth has six teeth and at six weeks usually from twelve to sixteen, indicating his capacity for other food than milk. The secretion of woman's milk increases in quantity under normal conditions up to eight or nine months and the human infant does not get his teeth until the seventh or eighth month, suggesting that up to this time other food is unnecessary for normal nutrition. In the artificially fed infant conditions are different and we have lately seen the great advantage of the earlier use of other articles of diet, of fruit juice, egg, broth, and even fresh vegetables. Thus we have been supplying the deficiencies of cow's milk.

As to the subject of casein, Osborne and Mendel have found that the gain in weight with 9 per cent of the food solids in the form of casein was very slow unless cystin was added, but if the casein was double, increased to 18 per cent, a normal rise in weight was seen. This was an important fact and shed light on some of our failures and successes in infant feeding. The success which has attended the use of formulas made from whole milk has not been entirely due to the fact that fat disturbances have been avoided, but that in these formulas, by increasing the protein we have come nearer supplying the infant's actual amino acid needs for growth.

Dr. Holt stated that in his experience in acute intestinal disturbances it was the carbohydrates that were most frequently the exciting cause, and sugars were even more badly borne than starches. Milk sugar seemed to cause more disturbance than any other form of carbohydrate. It is for such cases that Finkelstein's milk modification is so valuable. Its usefulness is seldom enhanced by preparing it from skimmed milk, but rather the contrary. For its relatively high fat was usually tolerated without difficulty when very low sugar was given. This preparation should be regarded as a therapeutic agent and not a method of infant feeding. These newer facts regarding proteins were bound to have an important influence in their future study, not only of the role of protein in infant feeding, but in making clear the fundamental protein requirements in nutrition and in opening up a new field of investigation in the problem of artificial feeding.

Present Opinion as to the Role of Fat in Infant Feeding.—Dr. John Lovett Morse of Boston, in discussing this phase of infant feeding, stated that the fat in infants' food is chiefly in the form of neutral fat. The saliva has no action upon it. Saponification begins in the stomach, but the action of the gastric lipase is quickly stopped when the reaction of the gastric contents becomes acid. The amount of digestion of fat in the stomach is, therefore, unimportant. The real digestion of fat takes place in the small intestine, where it is split into fatty acids and combines with the alkaline carbonates to form soaps. Fat is probably largely, if not entirely absorbed in the form of soap. Neutral fat is not absorbed. The absorption of fat is extremely good in health, whether the food is human or cow's milk, more than 90 per cent of the fat ingested being usually absorbed. During the early weeks of life stools contain a large amount of fat; after this time from 14 to 25 per cent of the dried stool is composed of fat. Under normal conditions at least 75 per cent of the fat in the stools is split into fatty acids and soaps. Little is known of the significance of fatty acids and soaps. Fatty acids are irritating to the intestines; soaps are not. A loose acid stool can often be changed to a soap stool by a relative increase in the amount of casein in the food, while an alkaline soap stool can be changed to an acid stool by a relative increase in the amount of carbohydrates. The intestinal flora also changes with the change in the reaction. The absorption of fat in babies that are passing soap stools is less than when the stools are normal. This raises the question as to why so many pediatricians are anxious to get soap stools. Increased persistalsis with consequent diarrhea results in an increased loss of fat in the stools whatever the cause of the diarrhea. The relation between the amount of fat in the food and the absorption of such salts as combine with fat would seem at first to be a simple one, but such is not the case. It seems probable that when there is a large amount of soap the absorption of calcium and magnesium is diminished, and it would also seem reasonable to suppose that when the fat in the food is increased beyond a certain point there would be an increasing loss of mineral salts. This is apparently not the case, because data from metabolism experiments show that in the normal infant a high fat intake does not change the mineral composition of the stools. In chronic malnutrition the output of salts in the feces is considerably raised by increasing the fat in the food; in these cases there seems to be a considerable diminution in the absorption of fat. In some instances, however, the percentage of absorption has been higher when large amounts of fat were given than when small amounts were furnished. It is evident from these facts that there is nothing in our present knowledge as to the digestion and metabolism of fat in infancy to justify the assumption, or even the supposition, that the normal infant cannot digest and utilize fat in reasonable amount. It is also evident that the ills that have been attributed to the fats in the food are really due to an excess of one of the other food elements or to an improper relation of the food elements to each other. In abnormal infants suffering from serious disturbance of nutrition the ability to digest, absorb and utilize fat is unquestionably diminished. Good human milk contains on the average from 3.5 to 4 per cent of fat and it would seem that this ought to indicate something as to the infant's need of fat in its food. There is no reason why a normal infant should not require as much fat in an artificial food as in its natural food. Investigation shows that it utilizes the fat of cow's milk as well as that of human milk, and thrives on artificial foods containing approximately the same amount of fat as human milk. The functions of fat and carbohydrate, though both are heat producers, are not the same, the metabolic water formed from fat being much greater than that formed from carbohydrates. The caloric value of a gramme of fat is 9.3, while that of a gramme of sugar and starch is 4.1. Very considerable amounts of carbohydrate must therefore be given to make up for a deficiency of fat, and if the carbohydrate is increased beyond a certain point, carbohydrate indigestion is certain to develop. Fat and carbohydrate cannot therefore be used interchangeably beyond a certain point. As to how much fat the infant should take, it may be said as much as it needs to satisfy the caloric requirements which should be met by fat and not enough to overtax its digestive capacity for fat. Nature has decided that in human milk this is from 3.5 to 4 per cent. The writer stated that this experience and that of many others had shown that this was the optimum amount after the first few weeks of life for the artificial food of the normal infant. More than 4 per cent should not be given except temporarily and for definite reasons. There are many reasons why physicians have given excessive amounts of fats, among them the failure to distinguish between normal and abnormal infants. What is proper, advisable, and necessary in normal infants, is improper, inadvisable, and not only not necessary, but harmful, in the abnormal. It is self evident that infants that have developed an intolerance for fat as the result of the excessive feeding of fat or of some chronic disturbance of nutrition cannot take without injury the amount of fat which the normal infant needs in order to thrive. It is equally self evident that when there is an exceedingly acid condition of the intestinal contents, the products of the decomposition of fats, which are acid, will increase the symptoms.

The Part Played by Salts in Infant Feeding.—Dr. Frederick H. Bartlett reported the more recent investigations in salt metabolism as they related to the connection between salt metabolism and the food elements, to the low content of iron in cow's as compared with woman's milk, to rickets and to gain in weight.

As to the relation of salts to proteins, the writer stated that the nitrogen circulating in the blood is loosely held by the tissues, but cannot remain thus loosely held for any length of time without being excreted, unless the salts are in sufficient quantity to make the nitrogen available for the building up of living protein . It has been found that for every gram of nitrogen about 1.7 grams of ash are retained (Howland). Interesting observations in confirmation of this statement have been made by Levene, Holt, and Courtney at the Babies' Hospital Laboratory on the effects of high protein feeding and salt metabolism. These may be summed up by stating that a large intake of protein is accompanied by a large retention of salts, if the intake of salts is also high. The influence of carbohydrates in salt retention is apparently an indirect one. Carbohydrates increase the water retention, and with an increase of water retention there is an increase of salt retention. The marked gain in weight seen in high carbohydrate feedings is in part explained by the water retention. This gain is by no means an index to improved nutrition. Great danger lurks in excessive carbohydrate feedings, namely, the occurrence of sudden diarrhea with the accompanying disturbance in mineral equilibrium. The effect of diarrhea on mineral metabolism is manifest whatever the cause of the diarrhea.

The effect of fat on salt metabolism as studied by many German investigators may be stated as follows; In a food rich in fats, there is associated an increased ammonia excretion, which is compensated for by the alkali intake. If this intake is inadequate alkali is withdrawn from those tissues which can most readily release it. These tissues are the skin and muscles. In observations made at the Babies' Hospital it was found that there was in the stools which have a high calcium content also high phosphate. This would indicate that there was adequate calcium to combine to form soaps, and also to take care of the phosphoric acid. It had also been observed that in infants with soapy stools the calcium loss, as a rule, was not sufficient to cause a negative balance. The molecular weight of the fatty acids is very high and accordingly only a small weight of calcium is required to hold a relatively large amount of fatty acids. This observation is not in accord with the presence of soapy stools as an indication of abnormal digestion involving excessive alkali withdrawal. In the cases observed at the Babies' Hospital it was found that the only way that fat affected the salt metabolism unfavorably was in diarrhea in which was seen a great withdrawal of all salts, especially potassium and sodium. Even here this result is largely due to increased peristalsis. It may be said in general that in healthy infants the addition of large amounts of fat to the food disturbs the mineral metabolism only to a slight degree. If however, high fat feedings are persisted in long enough, disturbances may result in which there is a dealkalinization of the tissues of serious import. The practical lesson in infant feeding from these investigations seems to be to give moderate percentages of fat, such, for example, as are obtained by the dilutions of whole milk.

At to the deficiency of iron in cow's milk, it may be recalled that cow's milk contains in larger quantities the corresponding salts of woman's milk with the exception of iron. After cow's milk is diluted the iron content is reduced to a negligible quantity. It is desirable to make up this loss of iron. It is the author's opinion that the nutrition of many children has suffered from a failure to supply this deficiency early enough. The age at which this deficiency manifests itself is after the sixth or seventh month, and at this age the loss in iron may be made up by giving other foods besides milk. If these foods are given in small quantities and gradually increased, the adaptation to the new articles of diet may be accomplished without harm. Some of the foods which may supply the iron as well as other salts are yolk of egg, cereals, green vegetables, and cooked fruit. Properly cooked and properly fed these foods may be given without damage to the digestion. Bery has shown that green vegetables furnish calcium in one of the best forms for absorption; this is especially true of spinach. Children thus fed seem to be stronger and healthier than those exclusively milk fed during the first year. In considering the question as to the amount of calcium which an infant needs if he is to remain free from rickets, it has been found that the calcium requirement varies with different infants. A long infant will require more than a short one, a rapidly growing one than a slowly growing one, etc. An average deposition of 0.17 to 0.18 grams of calcium in the tissues a day is a fair average. It seems that the answer to the question, "What is the calcium need of an infant to remain free from rickets,'' cannot be stated since the cause of rickets seems to lie in the failure to make use of the calcium which is ingested and not in an adequate supply in the food.

The salts are an essential element of the food in the determination of a gain in weight. A diet without normal salts, but with adequate calories will invariably be accompanied by a rapid loss in weight. This loss in weight can only be explained by a loss to the organism of water. The sodium salts, chiefly sodium chloride, are those most intimately associated with the retention of water in the organism. The potassium and calcium salts for the most part have the effect of withdrawing water from the organism. This effect of the salts on the water retention is only operative if an adequate amount of water is ingested. For an infant of four weeks, each kilogram of body weight requires 142 grams of water, of six months, 122; the adult requires 35 grams of water per kilo of body weight There is also a close relationship between carbohydrates and water retention, there being a greatly decreased retention of water in animals fed on carbohydrates.

Dr. Bartlett exhibited charts showing the results of experiments with reference to the value of hypodermoclysis in cases in which there has been an excessive withdrawal of water from the tissues. The results of these investigations seemed to show that this procedure was of no permanent value. As a result of hypodermoclysis there might be a temporary retention of salts, say for twenty-four hours, and this would then be followed by a rapid excretion of salts. The question remained, however, whether the retention of salts for this short period was of any value in cases of severe diarrhea accompanied with great loss of water.

DISCUSSION

Dr. Charles Gilmore Kerley had been particularly impressed with Dr. Bartlett's paper on the salts in cow's milk and that it had opened up a field which had been very much neglected. Not much attention had been given in the past to the intake and outgo of salts and he was glad to see that this element of the infant's food was at last receiving consideration. The point that the giving of salts in the form of vegetables when the infant was five or six months of age was an advantage well taken. Of course maternal nursing was the ideal way of feeding a baby, but many babies after reaching the age of seven months showed some signs of malnutrition in the way of rickets if they did rot receive additional food. Perhaps a great deal of the credit given to material nursing was due to the fact that very frequently where the mother nursed the baby it received additional food at a comparatively early period. Instead of giving egg and milk, particularly in young infants, a better scheme was to give protein-free milk. Dr. Harrison of Yonkers has been preparing to give a skimmed milk which is protein-free and is supplied in powdered form so that one gets the salts of the milk and the milk sugar. This preparation could be given in the amounts desired to children on the breast, thus furnishing the amount of salts that were desirable. This protein-free skimmed milk ought to and does supply a useful supplementary feeding.

Dr. Morse has called attention to the distinction that must be made between the well child and the sick shild. This is a distinction which we must always keep in mind. The well child requires and takes 3 or 4 per cent of fat, but it is not difficult to feed well babies. There are hundreds of them brought up all over the country on milk and cereal without any trouble and that is not our problem; it is the feeding of the sick child that requires all our efforts, and in such instances we have to follow a different line of procedure. In case a child has carbohydrate indigestion we give it low sugars and find that it will take proteins better; if there is fat indigestion we reduce the amount of fats and make up for it by the addition of starch. Some young children have a very good capacity for starch and can tolerate starch up to 4 per cent. In these various ways one can raise the calories to the required amount and thus carry a baby over a difficult feeding period.

Dr. Henry Dwight Chapin was interested in Dr. Holt's views with reference to the feeding of protein and particularly with reference to what he said about casein, as to the amount of casein being less important than its nature. Many years ago he called attention to the fact that casein has a developmental function in young animals and in infants as well as a nutritive function. The protein in the milk of the different species of animals coagulates in different ways. For instance, taking the ruminant herbivora we find that the casein coagulates in hard lumps which are intended to develop the motility of the animal's stomach, because the animal must later feed on grass, grain, etc. In this class of animals the stomach is 70 per cent of the entire digestive tract and it is important that the casein be of such a character as will develop the motility of this organ. On the other hand, in the nonruminant herbivora, as the mare and the ass, the casein coagulates in a gelatinous mass that passes easily through the pylorus and later on digestion is largely intestinal in these animals In human milk, which is midway between these two, we get soft, flocculent coagula. In the infant the stomach is only 20 per cent of the entire digestive tract so that a considerable portion of the digestive process takes place in the intestines. We then learn from biology that the casein has not only a nutritive but also a developmental function to perform and we have learned why we need not be so afraid of giving protein as we formerly were, and why it is not advisable to go to extremes in trying to modify it. At birth the different species of animals all digest milk alike, but at the end of a year all are taking different kinds of food. The milk has developed the digestive tract in each species in a different way, and if we wish to be successful in the feeding of the infant we must follow Nature.—Amer. Jl. Dis. Women and Children.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE

Infantile Paralysis.—R. Tunstall Taylor (New York Med. Jour.) emphasizes the need of greater care in the early recognition of infantile paralysis and the importance of using appropriate means to prevent its spread. Elimination of the toxin should be facilitated in every possible way. As hexamethylenamine has apparently helped some cases and can do no harm it should be given in the early stages. Rest is most important in order to give the muscles a chance and freedom from strain. Warmth helps the hyperesthesia and nerve pain. No matter whether a part is paralyzed or not, efforts at assisted active movements should be tried and passive movements and massage given, possibly aided by Faradic electricity, slowly interrupted by a pendulum to produce muscular contractures, no matter how slight. Braces must be used as light as possible, to compensate for muscular deficiency, prevent contractures, and promote a normal physiological balance. Tenotomy and myotomy must be employed later when moderate stretching will not affect the desired lengthening of overactive muscles. Tendon transplantation must be resorted to two years after the attack, based upon careful scientific and mechanical study, to produce a proper distribution and balance of power and support. Some form of tenodesis by tendon or preferably by silk can be used to supplement the tendon transplantation if the alignment is not perfect and relaxation of a joint exists. As in the writer's method, the tendon must be carried straight from the origin to the new insertion to gain the greatest mechanical efficiency, and the annular ligament must be employed when possible to take up any slack in the new order of things. The tendon is more securely fixed if sutured to a notch in the bone, retained in a fixed dressing four months, and without weight bearing for two months. Mutilating operations should be avoided as far as possible and used only as a last resort.

Origin of Icterus in the New Born.—Fiidtjof Bang (Arch. mens. d'obst. et de gyn., Aug., 1915) says that in examining the blood of the new-born there is found in the first hours after birth a great increase of red cells. This may be explained as the result of a stasis in the capillaries of the skin with a defective regulation of the loss of water. During the days following the percentage of hemoglobin gradually returns to normal, the infant adapting itself to extrauterine life. All infants are born with less amount of bile pigments in the blood than in the adults. Then begins an increase of the bile pigments, followed by a lessening of them. This corresponds to the oscillations in the omaunt of hemoglobin in the blood. On account of the failure of the infants to adapt the heart power to new conditions we have hepatic stasis, which is evidenced by lessening of biliary pigments in the blood. The presence of biliary pigment in the blood of the fetus may come from resorption of the bile from the intestine. The quantity of bile pigments in the blood of the new-born is so great that we must accept the theory of a poor function of the liver caused by defective development of the hepatic parenchyma. The author has made extensive blood tests in infants in the Maternity at Copenhagen.

Conservation of Vision and Prevention of Blindness.—G. E. de Schweinitz (A. M. A. N. Y. Med Jour.) believes it safe to say that fully 100,000 men, women and children in this country are, within the strict definition, blind; one-fourth of these need not have lost their sight. About 25 per cent of the inmates of schools and asylums for the blind have lost their sight from opthalmia neonatorum. The writer considers the measures devised and in operation for the elimination of this preventable cause of blindness, namely, education, compulsory notification, the punishment of offenders against properly constructed legal regulations, and compulsory prophylaxis. Of these compulsory notification represents the most effective method at our command, since a notification which should go at once to a legally qualified physician can quickly command the services of some one skilled in the treatment of ocular disease. The National Committee for the Prevention of Blindness should insistently urge that hospitals accepting State aid should make provision for the care of cases of opthalmia neontorum. This should be done not only because it is a real work of humanity, but also because it would mean a reduction in the number of blind and therefore a lessening of the economic loss to the commonwealth. The ravages of opthalmia neontorum have been so conspicuous that there has been a failure to recognize the importance cf trachoma and glaucoma causing blindness. The writer believes that the work of a national committee for the prevention of blindness should not be concerned alone with the prevention of blindness in the strict sense of that term, but ought to be concerned with the elimination of the evils which spoil the eye efficiency and suggests that a national committee such as the one in existence should have a subcommittee entirely concerned with the important question of illumination. Finallf, in discussing schools for the blind, and partially blind, Dr. Schweinitz expresses the opinion that much could be gained by a sensible application of the principles of modern psychological research, since an investigation of this character would help in the classification in accordance with the need of the case of each child.

Thickness of the Fatty Covering of the Body in Healthy and Sick Children.—S. Eatkin (Jahrbuch f. Kinderheil, Aug. 2, 1915) says that we can obtain important indications as to health from the thickness of the fatty coverings of the body, especially in children. The condition of nutrition, can be learned: by the increase of decrease of the abdominal fat we can follow the curve of nutrition; a centimeter of abdominal fat means 6 to 7 kilograms of body weight. The author has examined 200 children with reference to the condition of the fat, and made 1600 measurements. Of these children 46 were new-born infants, 27 were well children one to ten years of age, and 127 were sick with various diseases. The fat is thickest on the abdomen, next on the thighs. Some diseases lessen the thickness of the fat, while others increase it. The fat is not equally thick over all portions of the body. But there is a certain parallelism in the arrangement of the cutaneous fat in different portions of the body. The thickness of the fat increases with age. Girls have thicver fat than boys. A change of the fat on the abdomen goes with a similar change over the whole body. Children suffering from rickets, eczema, and scarlet fever have less fat than normal. The greatest changes in the fat occurs in tuberculosis and bad feeding. These conditions may use up all the fat in the body. The last to disappear is that over the abdomen. There is a tendency for the fat to react to all sorts of bodily changes, and to indicate the general nutrition of the body.

Diphtheria Carriers.—A recent investigation of diphtheria carriers in Detroit is reported by Goldberger, Williams and Hachtel, in Bulletin No. 101, of the Hygienic Laboratories, of the United States Public Health Service. The problem of diphtheria carriers has become one of considerable importance and has been given special prominence of recent years by the studies of von Sholly, Moss, and Nuttall and Graham Smith. The writers of the report mentioned above studied 4,093 people in the city of Detroit, and found that 0.928 per cent harbored bacilli identical morphologically with the Klebs-Loeffler bacillus. This figure is rather lower than those of some other investigators, but would indicate, as stated by the writers, that there were from 5,000 to 6,000 diphtheria carriers in the city of Detroit.

Of 19 cultures isolated from 19 of the carriers, only two were virulent, which would indicate that only 0.097 per cent of the people examined carried organisms capable of procuring disease. An interesting further point is that the bacillus Hoffmanii was present in at least 41.9 per cent of over 2,000 individuals examined, and that the 49 cultures morphologically identified as bacillus Hoffmanii were avirulent. This would confirm the impression gained, we believe, by most experienced laboratory workers, that a true Hoffmanii can be distinguished with considerable certainty from a Klebs-Locler bacillus by morphological examination alone, and that its significance is probably that of a frequently present saprophyte of the throat and pharynx. The studies of Goldberger, Williams and Hachtel also indicate that in examining for diphtheria carriers, it is best not to confine oneself either to the nose or throat, but that cultures should be taken from both places in every case.

Erysipelas Treated with Whole Blood from Convalescent Patient.—A. D. Kaiser (Arch. Pediat., Amer. Jl. D. W. and Child.) reports a case of erysipelas in a girl six years old. Attempts to check it early were made with the usual methods—antistreptococcus serum, lelukocyte extract and so forth. They seemed to have no effect on the course of the disease, the child's condition gradually becoming worse. Seven ounces of citrated whole blood were withdrawn from a convalescent case of erysipelas and injected into the muscles of the child. Within twelve hours the temperature had dropped to 100 degrees and in twenty-four hours was normal and remained so thereafter except for a slight rise one evening. Coincident with the drop in temperature was a marked local and general improvement, followed by complete recovery within a few days. It is urged in severe cases where the outcome looks dubious to use this method if a suitable donor can be obtained.

Child-Labor Problem in Relation to Health.—The question of child labor has always been a vexed one. It is well known—indeed it could not be otherwise—that young children should not be employed in manual labor or forced to work long hours under whatever conditions. In Great Britain child labor has been forbidden for a considerable time and naturally the results have been most satisfactory. In the report of the Surgeon General of the Public Health Service for the fiscal year ending June, 1915, child labor in Massachusetts is discussed. In January, 1915, the Massachusetts State Board of Labor and Industries requested that Assistant Surgeon M. V. Safford should be authorized to assist the board in the problems which confronted it with respect to the employment of child labor in the State, and he was accordingly detailed with the board under instructions contemplating a study of the effect of various occupations on persons during their period of adolescence. In May last under the direction of Dr. Safford comprehensive physical examinations were made of minors employed in the textile industries of the State, the examinations being in accordance with a prescribed scheme calculated to bring out and record any abnormal conditions possibly attributable to the individual's particular occupation or working conditions.

While sufficient data has not yet been accumulated to warrant positive deductions as to the effect or non-effect of the various kinds of work in the textile industries upon minors employed therein, enough has been done to make a prediction as to conclusions safe in certain matters of practical interest. For example, an undue proportion of boys employed have been found to be under height and weight for the ages given, but such deficiencies have been found to bear no relation to the duration of employment in the textile industry. To some extent such deficiencies are more apparent than real and are to be accounted for by successful evasion of the State laws with respect to the age and home employment of minors. However, no conclusion can be come to until the investigations have been completed; but as far as these have been carried it would seem safe to assume that the deficiencies of intelligence and physical strength already discovered among child workers are owing in a greater or lesser degree to their employment, which, in effect, means that children should not be allowed to work.—Medical Record.

Citrated Whole Milk in the Feeding of Infants.—Eric Pritchard (Practitioner, February, 1916) concludes that the citrated whole milk method is physiologically unsound because it allows no·latitude for adaptation to the individual digestive, assimilative, metabolic, and secretory activities. It affords little scope for the study of the influence of variations in the diet, and if the principles of percentage feeding are understood, a satisfactory food can be synthesized in a variety of ways to satisfy the physiological requirements of any particular child. Dried milk, if properly modified and of good quality, has all the advantages and few of the disadvantages of so called dairy milk.

Ronald Carter, writing in the same journal, obtains much better results by abandoning all routine methods and concentrating on the individual requirements. He found the citrated milk most useful in wasted infants.

Whooping-cough.—Ad. Czerny (Jahrbuch f. Kinderheil., June, 1915) says that by many his attitude with reference to the contagiousness of whooping-cough has been mistaken. It has been stated that he believes the disease not to be contagious. On the contrary he believes in its contagiousness, but that if the child is kept in bed in one place, not allowed to run around at all, and the bed is removed to a certain distance from the others around, no drop infection will take place, and the disease will not be communicated by the attendants to the other children. Therefore, he keeps no isolation ward for whooping-cough, but treats these cases in the same ward with other children. The distance between the beds must be one and a half meters. During eighteen years of carrying out this custom he has never had a communication of the disease from one bed to another. The cause of the disease is not communicated by the circulation of air in the ward. In this psculiarity it varies much from measles, scarlatina, and other infectious diseases. All children who cough are suspected of the disease and are so treated. If we keep a case of whooping-cough from other children there is no need of house infections. All that has been said applies to children over one year of age. Infant are much more easily infected with this as well as with other diseases. In most hospitals for infants the beds are entirely too near to one another to prevent passage of infections of the upper air passages. No nurse who is not herself coughing will carry infection from child to child. But i adults the abortive form of the disease, without the whoop, is not infrequent. Bacteriological examination of the sputum will not as yet cause a sure diagnosis to be made; but the condition of the blood is of value, since the disease shows a marked lymphocytosis.—Amer. Jl. D. W. and Child.

Whooping-cough a Serious Disease.—In an address before the New York Academy of Medicine, and reported in the Archives of Pediatrics, issue of August, 1914, John Lovett Morse, A.M., M.D., Professor of Pediatrics in the Harvard Medical School, made this significant statement: "The relative mortality from whooping-cough, scarlet fever and diphtheria is essentially the same throughout the country, whooping-cough being almost everywhere more fatal than scarlet fever and less fatal than diphtheria. * * * Instead of being a trifling affair, as it is usually considered to be by the laity, whooping-cough is a most serious and fatal disease. 'Any disease which kills 10,000 children per annum is,' as Rucker says,' a serious one.' If bubonic plague were to kill that many children in the United States in one year, the whole world would quarantine against our country. A child dead of whooping-cough is just as dead as a child dead of plague."

In the same issue of the journal above referred to, the editor, an undoubted authority, says that "whooping-cough causes more deaths in children under one year than any other infectious disease."

In view of these startling facts, is it not just possible that the profession at large, like the average layman, has been too prone to look upon whooping-cough as an inevitable concomitant of childhood, and to underestimate its seriousness

Aftertreatment of Infantile Paralysis.—A. H. Freiberg, in the Lancet-Clinic for February 26, 1916, (N. Y. Med. Jour), discusses the general technic and indications for tendon transplantation in the treatment of the paralyses following acute poliomyelitis, emphasizing certain special features which have not as yet received due recognition. Mistakes have been made in the past in using for transplantation muscles not closely enough related, functionally and morphologically, to those supplanted. Attempts to substitute for a paralyzed tibialis anticus a posteriorly situated muscle such as the flexor longus hallucis result only in failure. As pointed out likewise by Stoffel, transplanted muscles, if good functional results are to be obtained, must not be fixed to new points of insertion under abnormal tension, and must not be required to maintain a corrected position of the limb. On the contrary, the paralyzed muscle itself may be used as a temporary ligament (sewed under some tension to periosteum and deep fascia) to maintain position, and by the time it stretches, the transplanted muscle will be efficient enough to rended it unnecessary. Freiberg, following Stoffel's dicta in these matters in the last two years, has obtained greatly improved functional results in muscle transplantation. In equinovalgus of the foot, for example, he first does a subcutaneous plactic tenotomy of the tendo Achillis, exposes the tibialis anticus tendon just above the annular ligament; pulls the tendon out of the wound with enough tension to overcorrect slightly the position of the foot (now in supination and dorsal flexion), and sutures the tendon above to the tibial periosteum and deep fascia, to maintain this position. The tendon of the extensor longus hallucis is then exposed low down, drawn out above from its compartment in the annular ligament, passed under the ligament again with the tendon of the tibialis anticus, and finally fixed to the periosteum in company with the insertion of the latter. From this operation, properly planned and with entirely suitable aftertreatment, the foot may well become entirely normal in function and appearance. Where such a simple and direct operative plan is not available owing to the extent or character of the paralysis. tendon transplantation can no longer be considered the operation of choice. This is the case, for example in varus deformity, in which both peronei and sometimes the common extensor are paralyzed. Here Freiberg believes we must be content with an imperfect restoration of equilibrium, for more complicated procedures aiming at more perfect results are doomed to failure. Stress is also laid on delay of tendon transplantation operations until through preliminary treatment by fixation of the limb in a corrected position, supplemented by the application of local heat, skillful massage, and later, with muscle training by means of graduated exercises, has been applied.

Congenital Word and Letter Blindness, by T. R. Whipham (British Journal of Children's Diseases). This condition, known as alexia congenita, seems to be more prevalent among boys than among gilrs. At times it is found in more than one member of a family. The case reported is that of a girl eight years old, who presents some curious deficiencies. She cannot repeat the alphabet, but can write it perfectly on rare occasions. She cannot write a given letter, excepting, occasionally, the letter A. Her acquaintance with figures is limited. She cannot read simple words like "is" either from print or writing. She can write her own name and the name of the school correctly, but not her first or last name separately, always writing them together. After an interval she cannot read words she has written. She can copy correctly anything written or printed, which is quite common in cases of this kind. The Wasserman reaction is positive. As the patient in question is word and letter blind, and also letter deaf, the defect must be situated around the posterior extremity of the left fissure of Sylvius. Why the corresponding areas on the right side do not take on the functions of the impared senses cannot be explained. The outlook in these cases is not altogether hopeless; systematic and sympathetic training usually help.

Study of Congenital Pyloric Stenosis in Infants, by P. Hertz (Hygiea, November 1, 1915; New York Med. Jour.). The material consisted of sixty-one infants, forty-five boys and sixteen girls, in the Rigshospital and the Dronning Louisa Hospital in Copenhagen. The symptoms appeared at different periods from birth up to five weeks, oftenest in the second and third week. The retention occurred in the breast fed as well as in those artificially fed. The acidity varied from day to day and free hydrochloric acid could be demonstrated at times in all the cases. Treatment consisted in careful breast feeding (eight to ten meals of fifty to 100 gm. per diem) and lavage. Rectal injection of mother's milk was tried in one case with a resulting enteritis. The mortality was 14.8 per cent, excluding two cases that were moribund on entering the hospital and one with hemorrhagic diathesis. One case deserved mention from the sudden onset of explosive vomiting on the second day after birth with visible peristalsis and a palpable tumor in the pyloric region, the stools being watery. After twelve days the vomiting ceased and the pyloric swelling disappeared, the peristalsis continuing for two months. The findings in these cases would point to a true hypertrophy, both in the stenosed region and in the stomach, the author considering the difficulty to be of the nature of a pylorospasm, while he inclines to the belief that the hypertrophy is a primary one.

Intussusception in Infants.—Dr. Lewis S. McMurtry of Louisville said that intussusception was essentially an accident in infancy, since three-fourths of the cases obtained in children under two years of age. In a series of 300 cases collected by Grisel, 204 that is 68 per cent, occurred in breast fed infants under one year of age. Of all the varieties of intestinal invagination the ileocecal was by far the most common, and almost invariably was found in cases of infants and young children. Grisel concluded that in infancy 82 per cent at least were of this variety. In dealing with a case of suspected intussusception in a baby, the physician should, if possible, decide the diagnosis before leaving the house. He should study the case closely, give it immediate attention, and weigh each symptom carefully. The fate of the patient depended upon early diagnosis. When abdominal section was done success would depend more upon the operator's expedition and skill, with refinement of manipulation, than perhaps in any other abdominal operation. The young infant was easily shocked. It was very important that the invagination should be reduced by pressure from the apex of the intussusception, so that it was pushed out from within instead of being pulled out. The appendix should not be removed unless absolutely necessary, and every effort made to abbreviate the operative procedure. In his own experience he had found chloroform preferable for anesthesia. It was well known that after release of the invaginated intestine there was a tendency for recurrence of the invagination. To prevent this several operative procedures had been utilized. One was to shorten the mesentery by securing it in a position parallel to the intestine. Eliot adopted the method of attaching the disinvaginated intestine to the parietal peritoneum by a few sutures of catgut. This later method proved satisfactory in his cases. Every addition to the operation that was not absolutely necessary should be omitted, and every moment of time should be conserved in the patient's interest. Even with the best judgment and skill, the mortality of the operation during the first twenty-four hours stood at 40 per cent. When an irreducible invagination was found, the best procedure perhaps was to establish an artificial opening in the intestine and wait until a later date for the resection of the invaginated bowel. There was, however, but little choice between this and resection of the intestine at the time, since both procedures were followed by an extremely high mortality. He reported four illustrative cases of intussusception in infants under ne year of age. Two late cases were not operated upon and both died. One was recognized early, operation done and recovery insured; another came late, and unless there was an error of diagnosis, patient recovered without operation.—N. Y. Med. Jour.

The Operative Treatment of Pyloric Obstruction in Infants with a Review of Sixty-six Personal Cases.—Dr. William A. Downes of New York stated (So. Surg'l Ass'n Med. Record) that this report included sixty-six cases operated upon in five and one-half years. All presented the characteristic symptoms. A tumor was palpated in every case before operation, and this finding was verified at the time of operation. This experience threw new light upon the etiology or pathology of the condition. The theory best explaining the symptom-complex was, that a true malformation was present at birth consisting of an abnormal thickening of the circular muscle of the pylorus, and to this was added an edematous condition some ten days, or later, after birth. The edema probably resulted from the increased activity of the stomach necessary to force an increasing amount of food through the narrowed and elongated pyloric lumen. Gastro-enterostomy was performed upon 31 of the 66 cases, the remaining 35 being operated according to the method of Rammstedt. This latter method consisted of making a longitudinal incision 2 to 3 cm. in length, which was carried through the seroca and hypertrophied circular muscle fibres down to the mucous membrane. This incision was well liberated. Of the 31 cases in which gastro-enterostomy was done there were 11 deaths—a mortality of 35 per cent of the 20 discharged as cured, 2 afterwards died of gastroenteritis and 1 died of diphtheria. The remaining 17 were well and had developed normally. Roentgen ray examination showed the stamota working satisfactorily, and little or no bismuth passing through the pylorus. Of the cases dying in the hospital—a number began to vomit late in their convalescence, reoperation and autopsy offered no satisfactory explanation for the return of symptoms. After this unsatisfactory experience it was decided to give the partial pyloroplasty of Rammstedt a thorough trial. Consequently this operation had been done in the last 35 cases. In this series there were 8 deaths—a mortality of 23 per cent. Of the 27 discharged as cured, 2 had died since leaving the hospital, the remaining 25 were well extending over a period from a few weeks to one and one-half years. In no case had there been a return of the symptoms. The general condition of the babies submitted to the two types of operation averaged the same. A number in each series were almost moribund at the time of operation, and this accounted for the immediate mortality. The cases operated according to the Rammstedt method vomited less and were easier to feed after operation. The advantages of the partial pyloroplasty over gastro-enterostomy were time consumed for operation, the former requiring less than half that necessary to perform the latter, the operation required much less surgical skill than gastro-enterostomy, and the continuity of the gastro-intestinal tract was preserved. Roentgen ray examination one and one-half years after operation and autopsy on case dying three months after operation demonstrated the fact that the stomach functionated normally, and that the tumor entirely disappeared after this procedure.

The Possible Reduction of Mortality Among Subnormal Institutional Babies.—Dr. S. Josephine Baker of New York said, in a paper before the Amer. Ass'n Study of Infant Mortality (N. Y. Med. Jour.), that her paper was a combined experimental study of the Bureau of Child Hygiene of the Department of Health of New York, the Child Helping Department of the Russell Sage Foundation, and the New York Foundling Hospital. The high mortality of infants in so called foundling asylums was well known; but in properly supervised placing-out systems this mortality had been reduced. Available statistics of the relative value of institutional versus placing-out care had been generally founded upon a mass consideration of all infants in the institution and a broadly selected group of the better physical type of infants placed out. The present study was based upon the placing out of the physically poorest type of institutional infant. These included the premature infants, severe cases of marasmus, and other nutritional disorders. The selected group included only the type in which the institutional mortality had previously been approximately 100 per cent. The results of this procedure showed a mortality rate decreased to fifty-two per cent. The experiment covered a period of sixteen months.

Pyelitis in Infancy and Early Childhood.—L. R. DeBuys(Southern Medical Journal, March) divides the treatment of pyelitis in children into four groups: Drugs; irrigation of the pelvis by direct method; vaccines Hexamethylenamin and possium citrate are the drugs used most commonly, and of these the former is better. It is given early and in large doses,two to three grains every three or four hours to a child from one to two years f age. Ptassium citrate is given to alkalinize the urine and hinder the growth of Bacterium coli commune, and must be given in doses of from twenty-four to forty-eight grains daily to a child one or two years old to produce the desired effect. The direct method of irrigating the pelvis of the kidney is efficient in adults, but is not applicable to little children because of the relative size of the instruments and the parts of the patient. By far the most reliable measure of treating pyelitis in the small patient is by indirect irrigation of the pelvis with large quantities of liquids. It is well to dilute the food so that the patients may always be hungry and must take large quantities of fluid to satisfy their hunger and receive a sufficient quantity of nutriment. Fluids may be given regularly day day and night at intervals of two hours or less. In this way the pelves of the kidneys are kept clean and the pus is constantly diluted and washed out, preventing the formation of large masses of pus and thereby diminishing the frequency of the plugging of the ureters with the incident high rises of temperature. In this way many patients are kept relatively free from fever and comfortable throughout the disease. Vaccines are sometimes of benefit and should be autogenous, but the effect is not uniform and reliable. They should be given in doses beginning with 50,000,000, increasing rapidly to 200,000,000, or even 250,000,000, the interval varying from three to five days, depending on the reaction of the patient and the recovery from the reaction. Autogenous vaccine is indicated particularly in chronic and resistant cases. Should it not produce an immunity shown by the bactericidal property of the blood after from three to five vaccinations, its use should be discontinued.

In discussion Frank P. Gegenbach stated that he has had rather better success with sodium citrate than with potassium citrate, annd that he irrigates the bowels once or twice a day with normal salt solution in addition to giving large quantities of fluids.—L. W. Elias emphasized the need of large doses of hexamethylenamine.—Philip F. Barbour has had unpleasant experiences with that drug and is opposed to its use. He prefers potassium citrate.

BOOK REVIEWS

Food in Health and Disease, by Nathan S. Davis, Jr., A.M., M.D., Professor of the Principles and Practice of Medicine in Northwestern University Medical School; Physician to St. Luke's Hospital, Mercy Hospital and Wesley Hospital, Chicago; Member American Medical Association, American Climatological Society, Etc. Second edition, 425 pages, handsome buckram bindings, $3.50. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, Publishers.

Dr. Davis has prepared a handy working manual which reviews the chemical and physiological nature of the body and of various foodstuffs. The latter he discusses briefly in relation to the digestive organs and to the organism as a whole. In the first part of this volume the author discusses food in health, the uses and effects of water, the various elements of foodstuffs and the quantity and kinds of foods needed in health. The foods derived from the animal kingdom and foods derived from the vegetable kingdom are described with their food and fuel value given. Beverages receive due consideration and the subject of infant feeding covers two chapters. Part two is devoted to diet in diseases. In the first chapter general consideration is given to feeding the sick. Then follows the chapter dealing with diet in the more common diseases. Dr. Davis realizes the fact that the scientific value as well as the proper kind and dosage will often be of far greater value to the practicing physician than any knowledge of their therapeutic action on drugs.

Dr. Davis' recommendation for certain foods in certain diseased conditions, if followed, will be of great benefit to the physician in arranging the proper diet for his patient. In the present revision many additions have been made and almost every subject has been rewritten which was made necessary by additions of our knowledge of physiology and the management of diseases by diet. The author gives a full description of the principles of dietetics with a full and practical consideration of the problems of diet and their solution in health and in the most important diseased conditions.

The subject of trophotherapy has not received the attention in medical literature it deserves, neither has it been accorded the prominence in the curriculum of medical schools, which its importance demands. Therefore the subject has been and still is sadly neglected by the medical profession. Indeed, it is one of the most deplorably neglected subjects in the whole domain of medicine. While it is true that the subject is more widely appreciated at present than formerly, yet the average practitioner cannot tell the fuel value of a glass of lemon jelly or the definite amount of the various food elements of food substances contained in a pound of beef.

The reviewer makes apology for being so tardy in reviewing this admirable work on dietetics. We hope that the author in making his revision for the third edition will go into the physiology of absorption a little deeper and explain to the reader the deaminization of the protein molecule into the various amino acids, and give some explanation of the latest researches in this field. He might also be a little more explicit in pointing out the disadvantages of allowing foods containing purin bodies in certain diseased conditions. The importance of the lipoids should have some consideration and the significance of the enzymes and hormones in the process of digestion and absorption are of sufficient moment to be described. The vitamines of foodstuffs is an all absorbing subject which at present is little understood, but its importance is so far reaching that it involves a large proportion of the foods of civilized man and therefore should receive considerable attention.

A Practical Treatise on Infant Feeding and Allied Topics for Physicians and Students, by Harry Lowenburg, A.M., M.D., Assistant Professor of Pediatrics, Medico-Chirurgical College of Philadelphia; Pediatrist to the Mt. Sinai Hospital; Pediatrist to the Jewish Hospital; Pediatrist to the Jewish Maternity Hospital; Consulting Pediatrist to the Hebrew Orphans' Home. 375 pages, cloth binding. Illustrated with 64 text engravings and 30 original full-page plates, 11 of which are in colors. Price, $3.00. F. A. Davis Company, Philadelphia, Publishers. English Depot, Stanley Phillips, London, 1916.

Of late there seems to be no dearth of text books on infant feeding, many of which are first-class in every particular and their clinical and therapeutic teaching sound and helpful guides in arranging a dietary for children both well and diseased. The one feature of the present work is that it is founded largely on clinical, practical and personal experience. It is little given tó theorizing and instead of presenting a medley of views of different authors, he prefers to give his own opinions. He does not always give credit for views expressed which are not original unless they are too new to have become a part of common medical knowledge. He also sees fit to avoid quotations and references, believing them to be generally annoying and distracting the mind of the reader.

The author advocates and emphasizes the great importance of breast feeding and the digestive problems which attack this class of patients when artificially fed. He discusses the advantage and disadvantage of the caloric system in the scientific adaptation of artificial feeding for the child. The author believes the former methods of adapting milk, top-milk and milk and cream mixtures to the individual requirements of the child are too cumbersome and often incomprehensible to both the physician and nurse. Therefore he believes that whole or skimmed milk diluted as required is simpler and just as efficient. Wherever their use has given favorable results, the author recommends a few proprietary foods, not as substitutes for, but as adjuvants to cow's milk. The volume contains 64 illustrations and 39 plates which add much to the text. The chapter on "Surgical Treatment of Infantile Pyloric Obstruction" is written by Prof. John B. Deaver.

On the whole it is a very admirable book, well printed and well bound, and the author and publisher are both to be commended for placing such a practical work within the reach of the profession.

The Hygiene of Infancy and Childhood and the Underlying Factors of Disease, by A. Dingwall Fordyce, M.D., F.R.C.P. (Edin.), Extra Physician Royal Hospital for Sick Children, Edinburgh. Author of "Diet in Infancy." 275 pages, cloth binding, $1.50 net. E. & S. Livingstone, 15 Teviot Place, Edinburgh, Publishers, 1910.

While there are many first class books dealing with the clinical and therapeutic aspects of disease in childhood, we know of none in the English language which correlates the primary scientific facts of medicine as they more especially apply to pediatrics, than the present work. During recent years the remarkable development of scientific medicine has stimulated the growth of specialties. This growth has been so broad as to render it impossible for the general practitioner to keep abreast with special scientific knowledge except that closely related to his own clinical work.

Childhood is the period of hope—of hope by the child and of hope for the child. Every physician in treating a child is heartened by the certainty that the vis mediatrix naturae in its fullest and most bounteous vigor is on his side, and at no other period of life is it so true that while there is life there is hope, and at no other period is the recuperative power after disease comparable with what it is in childhood.

The busy practitioner will find in this little volume the latest teaching on the hygiene of infancy and childhood and the beginner in medicine will find it a valuable guide upon which to lay the basis for a clinical study of pediatrics.

Candy Medication, by Bernard Fantus, M.D., Professor of Pharmacology and Therapeutics, College of Medicine, University of Illinois, Chicago. Cloth, 82 pages, $1.00 net. The C. V. Mosby Company, St. Louis, Publishers, 1915.

This book is important to the pediatrician. It makes pleasant what has hitherto been to him an unpleasant task. It helps him to make friends with his patients, when formerly he was unwelcome because the medicine he prescribed was unpleasant to take. The principle set forth in this volume is so simple, so easily understood, and so valuable when put in practice, that it behooves all physicians to familiarize themselves with it. Researches conducted by the author in the Pharmacological Laboratory of the University of Illinois during the past five years, as well as the experience gained in private practice in the use of this form of medication, form the basis of this book. When one witnesses the struggles of the average child against average medicine, one cannot but wonder whether at times the struggle does not do more harm than the medicine can do good, and wish that we had other means of administering medicine to the little ones. As all children love candy, this would seem the form most desirable for them.

Dr. Fantus in his preface says to secure the best results the sweet tablets described in this formulary should be freshly prepared on physician's order, thereby securing efficiency and palatability to the highest degree, and enabling the physician to prescribe the dose and combination needed for the particular case in hand. To bring these tablets into the category of extemporaneous preparations, the author has elaborated the process of "fat covering" which makes the preparation of these tablets no more difficult than the making of pills or of suppositories.

Diet for Children, by Louise E. Hagon. 140 pages, cloth bnnding, $ .75. The Bobbs-Merrill Company, Publishers, New York and Indianapolis.

This little volume contains a complete system of nursery diet with numerous recipes, many menus for young and older school children. A home and school guide for mothers, teachers and nurses. Mrs. Hogan has devoted much time to child study and has made many contributions to the subject. In this book, the question of diet is fairly well covered. She indicates the kind of foods to give children and the frequency of feeding; discusses pure food and its value; furnishes a profusion of receipts and menus recognizing throughout that each child is a law unto itself. This little book should be of practical interest and ready value to mothers, nurses and welfare workers. It will suggest to the mother and nurse just when the physician should be called upon and give them besides information that will aid his efforts by the exercise of intelligence and judgment in the selection and preparation of foods indicated for various ages and varying conditions of illness and convalescence.

Diagnostic Methods, A Guide for History Taking, Making of Routine Physical Examinations and the Usual Laboratory Tests Necessary for Students in Clinical Pathology, Hospital Internes, and Practicing Physicians, by Herbert Thomas Brooks, A.B., M.D.; Professor of Pathology, University of Tennessee, College of Medicine, Memphis, Tenn. Third edition, revised and rewritten, $1.00 net. The C. V. Mosby Company, St. Louis, Publishers, 1916.

This little manual is especially designed for medical students, hospital internes, and physicians who have a limited amount of time to give to laboratory work. The author has endeavored to incorporate in this guide only the up-to-date and absolutely reliable but simple laboratory tests. If one is able to perform these tests accurately, and at the same time correctly interpret the results, it will very materially aid him in arriving at a correct diagnosis. In the third revision, the author has omitted all unnecessary or obsolete tests and all new tests of any value have been added, and the whole matter carefully gone over. A new chapter on technique of staining and examination of smears, most important exudates, etc., have been added. It is a very practical little manual and a clinical work on diagnosis which should be at hand as a reference book.

The Starvation Treatment of Diabetes, with a Series of Graduated Diets as Used at the Massachusetts General Hospital, by Lewis Webb Hill, M.D., and Rena S. Eckman, Dietitian. With an introduction by Richard C. Cabot, M.D. Price $1.00. W. M. Leonard, Publisher, Boston, Mass.

The appearance of the second edition of this work within so short a time is evidence of the merited success which the work has met with. This second edition has been revised and enlarged to twice the size of the first. The technique of the treatment has been rewritten and facts learned from clinical experience during the past few months have been emphasized.

This book furnishes to the general practitioner in compact form the details of the latest and most successful treatment of diabetes millitus. It presents the clinical application of the work done in recent years by Dr. Allen at Harvard and the Rockefeller Institute. Dr. Cabot states in the introduction "It seems already clearly proven that Dr. Allen has notably advanced our ability to combat the disease. To all who wish to give their patients the benefit of this treatment I heartily recommend this book." In a recent address Dr. Allen said: "However specialists may feel, there is no doubt that a majority of average practitioners feel bewildered and helpless concerning diabetes."

A section has been added containing receipts for diabetes and the list of daily diets has been revised and enlarged. There is a diet for fifteen consecutive days with the food values especially designed for ready reference.

A Handbook of Infant Feeding, by Lawrence T. Royster, M.D., Attending Physician Bonney Home for Girls and Foundling Ward of the Norfolk Society for the Prevention of Cruelty to Children; Physician-in-Charge of King's Daughters' Visiting Nurse Clinic for Sick Babies. Illustrated. Cloth binding, $1.25 net. The C. V. Mosby Company, St. Louis, Publishers. 1916.

The purpose of Dr. Royster in offering this book to the profession is to furnish the general practitioner the essentials and only the essentials of infant feeding in a compact and succinct form. While it contains little that cannot be found in most standard works, yet from brevity, this work should appeal to the busy practitioner who can readily find the information he seeks without the necessity of spending much time reading many pages in a larger work.

This little work of 15 chapters covers the subject of infant feeding in all of its phases from breast feeding to artificial feeding until the end of the second year. The publishers turn it out in convenient pocket size, and the busy practitioner will not turn from it with disappointment.

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EDITORIAL

TONSILLITIS AND RHEUMATISM

From the fact that tonsillitis often occurs as a precursor of acute arthritis, that it is occasionally undoubtedly followed by acute endocarditis and is sometimes benefitted by the administration of salicylates, many are inclined to regard it as of rheumatic origin in many cases. Dr. Packard, of Philadelphia, in a recent article in the American Journal of the Medical Sciences, reports several cases of endocarditis and arthritis complicating acute angina. He is disposed to regard these complications not as manifestations of acute rheumatism but rather as cases of irritation of serous surfaces by germs or their toxins which enter the general circulation from the inflamed tonsils. He cites a case of endocarditis which died of broncho-pneumonia, reported by Charrin, in which at autopsy the staphylococcus pyogenes aureus was found both in the tonsils and in the vegetations on the valves of the pulmonary artery. In most cases of endocarditis associated with tonsillitis reported, Packard was unable to find any evidence of articular trouble preceding the attack and in some cases he knew the heart to have been normal previous to it. If we designate these cases rheumatism it is apparent that tonsillitis stands as a cause rather than as an effect of the former disease. Indeed, this latter view is consistent with the so-called germ-hypothesis as to the origin of acute articular rheumatism in contradistinction to the metabolic and nervous hypotheses. This might lead us to the view that acute rheumatism is not due to one specific organism but is rather a form of septic intoxication or septic infection due to the absorption of the products of several species of micro-organisms of the absorption of the germs themselves in some cases. That angina is not always present in rheumatism is true, but the same process of inflammation and absorption may possibly go on elsewhere—in the gastro-intestinal tract, for instance.

THE VALUE OF BLOOD COUNT IN ANEMIA

In a contemporary magazine we find an author commenting upon the fact that the blood count in one of the diseases of childhood is always high in spite of the apparent anemia of the patients. Now it is a well established fact that quite a severe grade of anemia may exist without the number of red cells per cubit milimeter in the capillaries being lowered to any remarkable extent. In secondary anemias loss of hemoglobin is the first change to be noted, then changes in the size and shape of the corpuscles occur before the number of corpuscles is reduced. Lastly the so-called regenerative changes as evidenced by the presence of nucleated red cells are seen. One accustomed to examination of the blood can learn far more about a patient's condition by examining a smear stained with Ehrlich's solution than by a count of red cells alone. In fact, a count of the red cells is sometimes very misleading, if not checked by a simultaneous examination of a smear. Even in very severe anemias the blood count may at times be above normal from cyanosis, capillary stasis, or sudden concentration from purging, serous effusion, and so on. Error cannot arise from this if a stained specimen be examined at the time the count is made. After one has become accustomed to the ues of a particular bottle of Ehrlich's stain, if he always takes the same time to raise the specimen to 150 degrees C. to fix, he soon becomes capable of gaining a very accurate idea of the degree of anemia present and may even venture to guess as to the percentage of hemoglobin. More can be learned from a specimen stained by this method than from the blood-counter and hemoglobinometer combined.

THE TREATMENT OF ACUTE INTUSSUSCEPTION

When in a previously healthy infant we observe severe abdominal pains occurring in paroxysms, each paroxysm being attended by vomiting and more or less collapse, and when there are present tenesmus and mucous or bloody stools, we most probably have to deal with an acute intestinal intussusception. When, in addition to these symptoms, we can make out an elongated tumor on abdominal palpation, or can feel a protrusion on rectal examination, the diagnosis of this condition can be made with almost absolute certainty.

What should the general practitioner do to relieve this condition? If the symptoms are urgent, it will probably be impossible to reduce the intussusception by injections when the condition has lasted for many hours. If we try this method of treatment, the child had better be anesthetised and inverted, and hot salt solution injected into the colon under a pressure of only three or four feet. The amount the colon will hold differs very much in different cases. There is certainly some danger of rupturing the gut, even with slight hydrostatic pressure, if it be gangrenous. Whether it is gangrenous or not at the time of the injection, we can only judge by the acuteness and duration of the symptoms. The actual number of cases in which rupture of the intestine from hydrostatic pressure has occurred is very small, nevertheless some excellent authorities state that this method should never be employed in acute cases when the disease has lasted more than twelve hours. A great objection to it is that it is apt to lead the timid into placing too much confidence in it, and so cause most valuable time to be lost. When the situation of the obstruction is in the small intestine, reduction by hydrostatic pressure need not be attempted, as water will not pass the ileo-cecal valve except in the rare instances when it is congenitally deformed. Air is more apt to be successful in these cases, and has been particularly advised here because it was more likely to pass the valve. Dr. Rotch has pointed out that, as the invaginated portion of the intestine is not on a line with the axis of the canal but at an angle to it, hydrostatic pressure when persisted in may tend to push the different layers of the intestine together, and so actually prevent reduction.

Intussusception must be regarded from the beginning as a surgical and not a medical affection. By some surgeons injection is only tried in very recent cases, and then only after every preparation has been made for laparotomy should the former fail. Others do not attempt reduction by injection at all, but proceed at once to operate. Injection is only of value when it is easily successful, so that, like taxis in strangulated hernia, it should not be persisted in. Operation is far more likely to result favorably if done early, before adhesions have formed or gangrene occurred. Even the occasional operator is more likely to be successful early in the affection than if, beguiled by ultra-conservatism, he continues to try the injection treatment until inflammatory changes have occurred. Firm adhesions greatly increase the difficulties of the operation, while gangrene makes the prognosis almost hopeless.

Again, it is often impossible to tell with certainty whether the intussusception has been reached when the injection method has been employed. It is highly probable that the so-called recurrence after reduction is only a recurrence of the symptoms, due to partial or complete failure to effect reduction. It would seem then that early operation is indicated both because the operation is much simpler and more likely to be successful at this time, as well as because it is the only method by which we can be absolutely certain that reduction has been accomplished. That young children stand abdominal operations badly is denied by excellent authorities and, even if true, should not deter operation in what is nearly always a fatal affection when reduction is not accomplished easily by injection or early surgical interference.

PEDIATRICS

ORIGINAL ARTICLES

MULTIPLE BIRTHS: WITH REPORT OF A CASE OF TRIPLETS*

BY HARRY L. READ, M.D.
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In Genesis we find the earliest record of multiple births, where it is stated that Rebecca bore two living male children which were given the names of Esau and Jacob. The subject has been discussed from that remote period to the present; not only is it of vital interest to the medical profession, but of much importance from the aspect of social and political economy.

Many of the older writers on human economics speak of the necessary restriction of the population, and indicate ways and means to be employed in accomplishing the desired results, such as (a) the existence of legal enactments having for their primary object the restriction of the family and thus in a measure preventing superfluous population, (b) by destroying all female children above a stipulated number together with the weaker males, (c) by permitting the parents having children beyond their ability to support to sell them into slavery.

The writings of Aristotle illustrate the wonderful fertility of the women of Arabia and other warm countries, and that the birth of three to six children at a time from one mother was not an unusual occurrence. The Swedes have always been noted for their large families, fifteen to twenty children being not uncommon. The inhabitants of frozen Iceland are also said to be extremely prolific, and the early settlers of North America were generally blessed with large families. It is also claimed that the inhabitants of Great Britain are unsurpassed in prolificity. However, it matters not what be the country, the latitude or the nationality of the people, barring certain exceptions; the prolificity has been the same in both ancient and modern times. It must be admitted, in this connection, that at the present day in certain localities where abortion, criminal and otherwise has become so generally practiced, as a matter of course fewer infants are born alive.

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*Read before the West End Medical Society of Louisville, Ky., March 14th, 1916.

The best authorities differ as to the frequency with which multiple pregnancy occurs. Edgar gives it as follows: Twins occur once in ninety cases, triplets once in eight thousand cases, quadruplets once in every four hundred thousand cases. Multiple pregnancies appear to be about equally divided between primiparæ and multiparæ. Some authors, however, claim that the former are much less susceptible than the latter.

Multiple pregnancy arises from the impregnation of two or more ova at the same coitus, or the impregnation of one or more ova after one has already been impregnated. If superfetation be possible, it must be exceedingly rare. The principal factor in multiple pregnancy is heredity, and this is especially shown on the maternal side.

On October 19th, 1915, I was called to see Mrs. H., aged forty years, married four and a half years, who gave the history of being about five and a half months advanced in her first pregnancy. The family history was unimportant, other than that two sisters and one aunt had given birth to twins.

I found the patient in a very nervous condition, and complaining seriously of what she described as ''shortness of breath.'' Inspection revealed a very large abdomen, which at first glance looked about like a full term pregnancy; but further investigation disclosed a uniform distension of the entire abdomen from sternum to pelvis. Palpation elicited a tympanitic note over the entire abdomen. I was unable to locate the fundus of the uterus, nor could a definite tumor mass be detected. Vaginal examination showed that the cervix was practically out of reach. There was considerable edema of the feet, lower limbs and thighs. Pulse 140, respirations 30. The patient was unable to assume the recumbent posture on account of the distressing dyspnea. Blood pressure, systolic 180, diastolic 70. Examination of the urine showed the specific gravity 1002, albumin abundant; no microscopic examination was made at that time. The patient stated that her appetite had been ravenous and that she had been drinking large quantities of water.

A milk diet was ordered, and water was allowed sparingly. Gave her one ounce of castor oil, and magnesium sulphate in saturated solution, every three hours until free evacuation was obtained. The patient stated that she had noted some quivering or slight movement within the abdomen. At my first visit, however, I was unable to make a positive diagnosis of pregnancy.

On October 21st, two days later, I again saw the patient. She was then feeling somewhat better, as her bowels had been thoroughly evacuated; the edema had partially subsided, and the dyspnea less troublesome. Upon examination I detected what appeared to be an abdominal mass or tumor, but could hear no fetal heart sounds, and was not quite sure that I could hear the uterine souffle. At this time her pulse was 120, respirations 24, systolic blood pressure 160. With bowels and skin active, restricted diet and rest, she steadily improved.

On November 10th I first distinctly heard the fetal heart sounds. There was still some albumin in the urine, but microscopic examination showed no casts present. Pulse 100, systolic blood pressure 140.

December 1st the pulse was 90, systolic blood pressure 130, albumin absent from the urine, the edema had entirely disappeared, patient eating and drinking normally, sleeping much better, and taking short walks every day.

The blood pressure was recorded and the urine examined at intervals between this time and January 11th, 1916, when I was called to the patient because of signs of beginning labor. Physical examination at this time showed a very large and irregularly shaped uterus; with the stethoscope I could hear one fetal heart sound in the lower right quadrant, also one in the upper right, and one in the upper left. These latter two sounds were thought to be one heart beat transmitted through the body of the child in transverse position. Vaginal examination showed the cervix dilated to about the size of a silver dollar, the bag of waters had ruptured, and the fetal head was presenting. I made the diagnosis of twins, and advised the patient to go to the hospital for completion of the delivery, but she refused. The pulse at this time was 90, blood pressure 138. Low soapsuds enema ordered. The uterus was rigidly contracted, and remained more or less so for some time. There were rather severe pains at intervals, but the uterus did not become relaxed between pains.

The patient was again carefully examined at the end of two hours, when the fetal head was seemingly lower. She was given ½ c.c. pituitrin; shortly thereafter the pains increased in severity, and continued for an hour; but examination showed very little progress toward expulsion of the head. During the next hour the patient became easy and said she thought she could sleep, and as there was no immediate need of my presence I went home. I saw her early the next morning, and found she had slept some during the night. Pains had recurred from time to time, but there was still no progress. I was hurriedly recalled about noon, as the pains had become more severe, and examination showed the cervix thoroughly dilated without any further progress of the fetal head.

The patient then consented to go to the hospital; she walked to my automobile, and we reached the hospital at one oclock p. m. The patient was taken to the delivery room at 2:30, and ½ c.c. pituitrin administered. Twenty minutes later the pains decidedly increased, but as there was still little progress Dr. I. A. Arnold administered chloroform and I immediately applied forceps and delivered a living female child weighing four pounds. Within fifteen minutes I ruptured the second bag of waters, gave ½ c.c. pituitrin, and after waiting thirty minutes delivered a second living child with forceps without further anesthesia, this child was a male weighing five pounds. Within fifteen minutes I ruptured the third bag of waters, waited thirty minutes, then applied forceps and delivered the third living child, a female weighing four pounds.

The placenta was expelled within twenty minutes, the three cords being attached about two inches apart. The patient was given one dram fluid extract of ergot by the mouth; the uterus contracted nicely with normal loss of blood.

It may be interesting to note that these triplets were delivered about three weeks before full term, which is usually true of all multiple births, and may therefore be readily accounted for.

The day following delivery the patient's blood pressure was 118, pulse 80. She voided her urine normally ten hours after delivery, and was able to sit up in a chair on the tenth day. The presence of milk in the breasts was first noted on the third day, and the secretion ceased on the twentieth day; the milk was limited in quantity during the time it was secreted, and the breasts were very small. The babies were nourished on modified cow's milk. The mother and children left the hospital on the fourteenth day. All four patients are now living and well.

The management of cases of this kind, when each child presents in normal (L. O. A.) position as these did, is practically the same as in an ordinary birth. Edgar states that about sixty per cent of triplets present in the cephalic position. Of course when there is an abnormal presentation, such as the interlocking of the fetal head, or when the parts of two fetuses present at the pelvic inlet, etc., special methods of management are demanded.

As to the prognosis: The risk to the mother in multiple is much greater than in single births. Toxemia of pregnancy and eclampsia are not uncommon. Edgar gives the ratio of multiple to single births as eleven to one and one-tenth. Abnormal presentation may occur from over and irregular distension of the uterus. Uterine inertia, prolonged labor, and postpartum hemorrhage are more frequent than in single births.

The infant mortality in multiple births is very high, statistics showing that at least thirty-one per cent of triplets are still born. The mortality is considerably less in twin births.

I deemed this case of sufficient interest to warrant detailed report. not only because of the successful delivery of living triplets. but from the fact that when the patient was first seen, during the fifth month of pregnancy, she presented an extreme ly nervous condition, with dizziness, sleeplessness, headache, albuminuria, marked edema, high blood pressure, rapid pulse, —the characteristic symptoms of the toxemia of pregnancy.

THE AURAL SCHOOL-CLINIQUE*

BY JAMES KERR LOVE, M.D.
Glasgow, Scot.

The advent of the aural school-clinique is perhaps the most important development which has taken place in the treatment of ear disease for the last quarter of a century. Apart from deaf-mutism and tuberculous disease, there is little ear disease among children till the beginning of the school period, for not only does he meet the infectious diseases scarlet fever and measles, but his naso-pharynx, often choked by adenoid growths and a good soil for the germs of disease, infects his middle ear, and suppuration begins there. Nearly all the middle-ear disease of later life, both suppurative and non-suppurative, commences during the earlier years of the school period.

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*Practitioner.

Before the advent of the school-clinique the ears of school children were, for the most part, treated at the public dispensaries, i.e., the outdoor departments of special and general hospitals. The medical officers, the nurses, and the equipment of these institutions were good, as good as the school-cliniques now are. And yet these institutions, with regard to the treatment of middle-ear suppuration, were partial failures. The school child could not attend these institutions without the loss of at least half a day of his work at school. He could not attend often enough without ruining his school work altogether. And lastly, he could not attend alone. His mother or her substitute had to come with him, and so the loss did not stop at the school—it spread to the home. As a rule, the treatment had to be given up or carried out by the mother, and as the manipulations in the treatment are difficult, or at least require some knowledge and skill, the treatment failed. I am speaking from an experience of nearly twenty years at the outdoor department of a large hospital.

Such disease starting in school life tends, if not properly treated, to become chronic, and accounts for most of the deafness and most of the conditions requiring operation in later life. These contentions will hardly be seriously contested, and if they be true then treatment of ear disease during the school period is more important than its treatment at any subsequent period. If it be further granted— and this paper will fully establish the argument—that the treatment of ear disease during the school period is very successful, the contention that treatment of ear disease during the school period in the school-clinique is the most important development of the last quarter of a century will have been established.

In Scotland the school ear treatment clinique is only four years old. It is true that under the heading of inspection, treatment had been carried out by the writer at the School for the Semi-Deaf and Semi-Mute under the Glasgow School Board for two years previous to that. And it is also true that for over twenty years the writer has carried on a weekly clinique at the Glasgow Institution for the Deaf and Dumb. This is probably the oldest aural school clinique in this country. But the ears of the school children of the elementary schools were not treated in school till four years ago.

My experience at the Glasgow Institution and at the School for the Semi-Deaf and Semi-Mute led me to expect good results from the treatment of school children by nurses in the elementary schools. At the Institution, to begin with, the number of cases of middle-ear suppuration was at first 6 or 7 per cent; now there are sometimes not more than 2 per cent. The children at the Institution are about half congenitally deaf and half cases of acquired deafness. At the Semi-Deaf School, where the children are nearly all cases of acquired deafness, the proportion of middle-ear suppuration is at least 10 per cent, and some of them are post-mastoid operation suppurations. The effect of treatment by nurses is therefore more difficult to estimate, but among 50 children at present only 6 or 8 are actively discharging.

The Arrangements in Glasgow.—The following is an outline of the arrangements for treatment under the School Board —Seven nurses give their whole time to the ear work. They visit about 27 schools, or about 1 in 3 of the schools under the Board. Children from the other schools come to these 27 centres by arrangement. There are about 100,000 children in the schools of the Board. Four clinics have been equipped by the Board and the aurist visits all of these. Really, however, almost all the work is done at two of these cliniques—Elmbank Crescent, near Charing Cross, and the annex to the Calton School. All of these cliniques are fully equipped. There is an aural chair for the child. A sterilizer is kept continually boiling for the cleansing of instruments. Specula, cotton holders, syringes, forceps, etc., are provided in abundance. Electric light is the illuminant for the forehead mirrors. No operative work is done at the cliniques, except the occasional removal of granulation masses under a local anesthetic by means of Hartmann's forceps, the opening of boils, etc. Mastoid cases are sent to the nearest general or special hospital. Tonsils and adenoid cases are also referred to the hospital serving the district in which the child resides. The work done in the cliniques is on the same lines as that done at the outdoor department of the hospital. The aurist's visit extends over two hours, and he has the assistance of four nurses during this visit. About 10 cases per hour are dealt with, and the visit takes place twice a week. Cases are dressed by the nurses twice a week as a rule, but cases requiring daily attention get this, and in many cases the dressing need be done only once a week or even less often. After two or three months batches of cases are brought before the aurist to be "passed off" as cured, or to have treatment altered. The parents are present during the first examination by the aurist, and, as a rule, at any subsequent examination by him, but not when the nurses carry out the routine treatment. When a case is passed off as cured the patient is instructed to inform the headmaster should pain, deafness, or discharge recur. The cases reach the aurist by being sent by the Chief Medical Officer, by the school doctors, or by recommendation of the headmaster or class teacher. The work has been going on for four years, about 3,250 cases or about 3 per cent of the children attending school have been sent up, and although new cases are constantly coming up, the arrears of work have been overtaken, so that these 3,250 children represent roughly the aural cases in an educational generation—a school attendance of eight years.

Of the 3,250 cases sent up, over 750 had masses of cerumen in their ears; over 1,400 had active suppuration of one or both middle ears; 750 showed evidence of past suupuration of the middle ear, although no discharge was present at the time of the examination. 774 had mouth-breathing or evidence of blocking of the naso-pharynx associated with deafness; while 128 suffered from disease, mostly suppuration, which was judged incurable, and in practice was found to be incurable without some major operation on the middle ear; 30 or 40 cases of deafness due to congenital syphilis were discovered. About 100 cases of deaf-mutism, congenital or acquired, had to be sent to special schools for the application of special educational methods.

The following conclusions may be advanced as the result of four years experience in the treatment of the ear diseases present in the children of the Glasgow School Board (the figures used are taken from the first three years only):

1. The treatment of middle-ear suppuration in school children at aural school cliniques is very satisfactory. In most cases permanent arrest of the discharge can be effected without operative treatment of any kind. In many more cases, operative treatment of the naso-pharynx, along with careful dressing of the discharging ears, resulted in cure. In

some cases the dressing of the ears has to be continued for two or even three years before discharge ceases. The most obstinate cases result from measles and scarlet fever, which account for about an equal number of cases, and which together account for 20 per cent of the suppurating ears of school children At present measles is considered by the public as a trifling disease. It is really very destructive of life, and very productive of middle-ear disease and of deafness. It should be notified like scarlet fever, and, like the latter, be treated in an isolation hospital, especially when it occurs in the overcrowded dwellings of the poor. The suppurating middle ears of children who have scarlet fever and measles should be treated to a finish in the fever hospital by an otologist, even if operation be necessary for cure. After the middle-ear suppuration of the school child has been arrested, and during the progress of treatment, water schould be carefully excluded from the ear, and the use of the school bath, unless the ears be carefully protected, should be prohibited.

Great patience should be exercised in the treatment of the middle-ear suppuration of school children. Where one ear only is affected one has surgically a free hand, and the principles guiding the surgeon are the same as in suppurative disease occurring in the adult. Where both ears are affected, the principles are modified by the special conditions belonging to the school child, who has not yet attained a full vocabulary, who is not yet equipped mentally for the work of life and whose chief asset for that attainment and that equipment is his sence of hearing, which in the schoolroom is by far the most important gateway of knowledge. The probable effect of any operation on acuity of hearing has to be taken into account more carefully in the school child than in the adult.

2. Although the present results of the treatment of middle-ear disease and deafness are good at the aural school cliniques, they will be better when the post-nasal space can be attended to in all cases of middle-ear suppuration. At present this is not possible at the aural school clinique, for operative treatment is not provided by the School Board. There is lack of co-operation and often open antagonism, between the hospital and the school clinique. Logically, no doubt, the authority which cleans out a school child's ear may also operate on his naso-pharynx. Logically, also, the School Board may also perform the mastoid operation, and open the school

child's intra-cranial abscess. In practice the School Board stops at cleansing, and by this means tries to arrest the progress of suppurative disease of the ear. The best results cannot be gotten until either (1) the School Board assumes the whole responsibility for the treatment of children's ears, including all the operations practiced in fully equipped hospitals, or (2) comes to some arrangement with existing hospitals for the operative treatment of ear disease.

3. Syphilitic deafness is not common in school children; about 1 per cent of those sent up have this type of deafness. But every syphilitic deaf child will lead the clinical observer to a family which has been, or is being, ruined by a constitutional disease. The family picture thus got is a large number of conceptions, a large proportion of still-births, a large percentage of deaths during the first two years of life, chiefly from syphilitic meningitis, and the association with the deafness of blindness due to syphilitic disease of the eye. Syphilis is thus the most disastrous disease among us, from the point of view of the individual child, the family, and, as a consequence, of the nation. When it occurs in the child, syphilis should be notifiable like any other infectious disease, and the whole family put under treatment. There is no known treatment of the deafness of syphilis which is in any sense of the word successful.

4. As a minor but still important result of treatment, it should be noted that the teachers of the schools have offered spontaneous testimony to the improvement in educational progress which has occurred. Not only has the arrest of suppuration and the removal of post-nasal adenoids been followed by improved hearing, but the removal of ceruminous masses and of foreign bodies has been given a similar result, and greater educational progress has taken place.

PROGRESS IN PEDIATRICS FOR 1915*

BY FRANK C. NEFF, M.D.
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Infant Feeding and Metabolism.—Of definite value to the practitioner are the two books on infant feeding, one by Grulee[1] and the other by Morse and Talbot.[2] All the recent literature concerning infant metabolism and recent methods of feeding are comprehended in these exclusive works and should be read thoroughly by all who are interested.

Brown and Fletcher[3] have made some interesting observations on the occurrence of tetany in young children. They find that spasmophilia is seldom found in the summer months when there is a tendency to diarrhea. In diarrheal stools the excretion of sodium and potassium salts is increased eight to ten times, while the calcium and magnesium salts are not changed. Sodium and potassium increase the nervous irritability of a child while calcium and magnesium counteract it. Constipation then decreases the elimination of the irritating salts, sodium and potassium and the various symptoms of the convulsive state are increased. This occurs more often in children fed on cooked foods with a high percentage of carbohydrates. There is a retention of water and sodium chlorid. The authors have offered a practical treatment in the use of magnesium sulphate subcutaneously to control the spasms. The food is changed by taking away a part of the whey which contains the irritating salts. The calcium content is built up by the administration of cod liver oil and phosphorus. Urea was found to be the most useful diuretic in this condition in doses of 1 gm. of the organic diruretic urea. Castor oil for its purgative action was found to be of distinct benefit.

Bartholow[4] flays the pediatrist and other specialists who condemn condensed milk because of professional prejudice. He commends the French clinicians who prescribe it sensibly and are not afraid to use it when they find it necessary to the wellbeing of an infant that has an antiphylaxis towards breast or fresh cow's milk. He admits that not all condensed milk on the market is good but asserts that if condensed milk be manufactured in accordance with modern standards of knowledge of the necessary percentages which it should contain for infant feeding greater progress would be made.

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*Read before Jackson Co., Mo., Med. Society, Kansas City, Jan. 4 1916. Missouri State Med. Jour.

[1] Grulee: Infant Feeding, W. B.. Saunders Company, 1914.

[2] Morse and Talbot: Disease of Nutrition and Infant Feeding, The Macmillan Company, 1915.

[3] Brown and Fletcher: Amer. Jour. Dis. Child., Nov. 1915, p. 313.

[4] Bartholow: New York Med. Jour., Feb. 20, 1915.

Breast Milk.—A recent contribution by Holt and associates[5] emphasizes the need in the examination for large individual samples. After the first month of lactation, the composition of human milk does not vary, though it declines in quantity and the solids with the exception of sugar slightly decrease. There is least variation in the sugar of the components of milk. Sugar is present in somewhat higher percentage than usually given, and is about 7:5 per cent. The fat does not vary markedly during the various periods of lactation, but fat varies more than any other constituent in different individuals. In mature milk the protein is seldom higher than 1.25 per cent, one-third casein and two-thirds lactalbumin. The sodium salts show the greatest variations in different individuals and at different periods of lactation, the calcium salts seldom vary in any individual or at any period. Potassium and calcium comprise more than half of the total salts in woman's milk.

Digestive Disturbances.—An interesting report by Smith and Cobb[6] on the necropsies performed on 100 infants at the Boston Floating Hospital, showed a striking number of infants with fatty livers, which were found in the healthiest and best nourished subjects, and not in those who had been the victims of chronic wasting diseases. Those who died of acute diseases therefore, from a short illness, show the presence of a large amount of fat in the liver. Smith and Cobb believe that a fatty liver is the normal condition in infancy because the liver as a reservoir for fat has been stored with much of it from the milk which forms the diet of infants.

Summer Diarrhea.—The experiences in Boston, according to Kendall,[7] indicate that certain organisms causative of summer diarrhea are epidemic and dominant during certain years. For instance, during 1910, the dysentery bacillus was the most usual organism causing severe diarrheas in children. There were few of these cases in 1911, during which year the streptococcus was the most frequent. In 1912 these two organisms were not common, while the gas bacillus was dominant. In 1913 the capsulated bacillus proved to be the etiologic factor in the epidemic cases. Late in the summer, Kendall states the type of organism is different and is usually the one to appear the following summer. Sugars in the infant's food are well borne and have a curative role in dysentery cases, except in gas bacillus dysentery when protein foods are to be used.

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[5] Holt, Courtney Fales: Amer. Jour. Dis. Child., October, 1915, p. 229.

[6] Smith and Cobb: Arch. Pediat., June, 1915, p. 434.

[7] Kendall: Boston Med. and Surg. Jour., June 10, 1915.

A confirmation of the work of Kendall is found in the report of Sylvester and Hibben[8] in which the scientific basis is given for determining the cause and treatment of bacterial intestinal disturbances. The stools are tested in a sugar medium wherein the gas bacillus, if present, will evolve gas of varying amounts depending on the number of bacilli and spores present. They found that the gas bacillus is not a normal resident of the healthy breast-fed infant, but is present in bottle-fed infants examined. They think the gas bacillus is a normal of this organism. They prefer to use lactic acid milk rather than lactic acid culture. The treatment is as follows: In a diarrheal case give an initial dose of castor oil, then for the first twenty-four hours use exclusively a 5 per cent solution of lactose during the determination of the presence of the gas bacillus. If the dysentery bacillus is the causative ogranism, a food high in sugar is given. If the gas bacillus is found, the lactic acid milk, high in protein and low in sugar, is the rational food. Twenty-nine out of thirty-one cases of infectious (gas bacillus) diarrhea, became well in a miximum of five days. There were some cases of mixed gas and dysentery bacillus infection. These cases did not do well. All cases of dysentery showed after improvement a marked intolerance for fat during the succeeding weeks and months, making necessary the continuance of a fat-free lactic acid or other milk. The authors conclude that the gas bacillus is not normally in the intestine that it is pathogenic for certain cases of infectious diarrhea, fat intolerance, carbohydrate intolerance and chronic intestinal indigestion.

In summer diarrhea, Knox and Ford[9] found the gas bacillus present in the stools of all of eighteen children without marked intestinal disturbances, but not in the seven breast-fed infants examined. They think the gas bacillus is a normal and constant inhabitant of the intestinal tract of all children except breast-fed infants. Only when there is excessive development of the gas bacillus can any pathologic significance be attached to their presence in the intestine.

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[8] Sylvester and Hibben: Arch. Pediat., June, 1915, p. 457.

[9] Knox and Ford: Johns Hopkins Hosp. Bull., January, 1915, p. 27.

Intestinal Diseases

Intussusception.—There has been a remarkable reduction in the deaths from intussusception at the Children's Hospital in Boston, as reported by Ladd.[10] Before 1908 that hospital had operated on eight cases with one mortality. The mortality at the Infant's and the Massachusetts General Hospitals had been equally high. Since 1908 the total statistics at the Children's Hospital show of the operated cases, 32 recovered and 31 died, but in the last 19 operations 15 have recovered, a mortality of 21 per cent. Ladd believes that the history obtained from the parents is important enough to furnish sufficient evidence for operative procedure. The typical and constant history from the mother is as follows: The baby, nearly always under 2 years, had been perfectly well until suddenly attacked by pain, became pale and soon vomited. Thereafter the baby was at intervals almost well in appearance, with intermittent pain, crying and drawing up of the legs. A normal appearing stool was first passed, but in five or six hours a stool mostly blood was passed, vomiting occurred several times and food was refused.

In the first twelve hours tumor can be felt owing to slight distention. At the end of the first twelve hours four cases were operated on with no deaths, at the end of twenty-four hours eighteen cases operated on with three deaths and thereafter the death rate increases so that after sixty hours there was a mortality of 88 per cent.

Pyloric Stenosis.—At a meeting of the newly organized Central States Pediatric Society in Chicago, Alfred A. Strauss presented a novel and what seems to be the most efficient method of dealing with pyloric obstruction in infants. He classifies the disease as follows:

1. (a) Large tumors with almost complete compression of mucous membrane and complete obstruction. (b) Small amounts of hypertrophy of muscularis, but with almost complete compression of the mucous membrane, and complete obstruction

2. (a) Large tumors, with only partial compression of

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[10] Ladd, William E.: Boston Med. and Surg. Jour., December 9, 1915, p. 879.

the mucous membrane, and only partial obstruction. (b) Small amount of hypertrophy of muscularis, with only partial obstruction.

He demonstrated that the mucous membrane can easily be shelled out by everting the muscularis. He has done fifty-six pyloric operations by this method. He found that there is a temporary paresis of the pylorus which lasts for from two to twelve weeks. When the mucous membrane is separated from the muscles, he separated Meisner's from Auerbach's plexus which accounts for the paresis of the pylorus. He cuts down to the mucosa, shells it out, which reduces the folds of the infolded mucous membrane. The second part of the operation is to reconstruct the hypertrophied muscle to its normal thickness. This can be done by cutting away the inner circular layer or utilizing it as a plastic flap. The incision in the abdomen is very small, the pylorus is brought up to the wound with a hook, thus saving time and thereby shock. The operation reconstructs a diseased pylorus to a more normal pylorus so that the child continues to use a normal route for food passing from the stomach to the bowel.

We saw several children on whom he had operated and the results seemed to be perfect and the scar very small. The infants were fed within a few hours following the operation.

Intestinal Parasites in Children.—Although the laity is disposed to regard worms as the cause of many disorders in children, the profession is inclined to be conservative or skeptical regarding the frequency of parasitic infections. Possibly the statement in Holt's text book that such are comparatively rare is responsible for some of this conservatism. In the last few years, however, a few observations have been made which show that routine examination of stools in certain institutions and in certain communities reveals the presence of eggs and parasites in a fairly high percentage of children. Many of these are well and show no suggestivs symptoms. Greil[11] in a routine search for parasites in 665 children living in the section around Montgomery, Ala., found 36.1 per cent infected. As would be expected, hookworms were the most common, but 10 per cent of the children had other varieties of worms, the most prevalent being Hymenolepis nana and the Ascaris lumbricoides. Less than 1 per cent had pin worms.

[11] Greil: Amer. Jour. Dis. Child., November, 1915.

Genito-Urinary Diseases.—Zahorsky[12] concludes that the ammoniac odor so frequently observed on the diapers of infants with constipated or normal stools, comes from the ammonium compounds in the urine liberated by the alkali which is present in the imperfectly rinsed diaper. The alkali which has been retained in the diaper comes from soap, lye, lime or from the stool.

Sedgwick[13] has found that oxalic acid is excreted in the urine of newborn infants as high as 9 mg. daily and in older children the excretion is higher than in adults. It is found when on an oxalic acid free diet from carbohydrate fermentation or from an endogenous metabolism.

Hempelmann[14] measured the renal function by the phenolphthalein tests and found that children with orthostatic albuminuria show a marked reduction in the output of phenolphthalein during the period of albuminuria, while normal children in the same position of marked lordosis do not show any decrease in elimination. He favors the idea that this substantiates the theory that lordosis decreases the vascular supply to the kidney.

Forty infants less than 2 years of age were examined by Kowitz[15] for bacterial involvement of the urinary tract. Boys and girls were about equally affected. All indicated a close connection with disorders of the alimentary tract, and the organisms were colon bacilli, thought by the author to be carried by the blood. He thinks the name of pyelocystitis is not applicable, but that it should be called a bacterial nephritis or coli nephritis of small children. One investigator (Bahr) recovered bacilli from the blood of 117 out of 120 cases of digestive disorders in infants.

Ross[16] reports forty-three cases of bacillus coli infection of the urinary tract in children of which thirty-six were females. It most commonly accompanies an infectious process in the alimentary tract, but he has found it in diphtheria, lobar pneumonia, relapsing pneumonia, pneumonia with measles, migraine, tuberculous peritonitis with measles and miliary tuberculosis.

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[12] Zahorsky: Amer. Jour. Dis. Child., November, 1915, p. 436.

[13] Sedgwick: Oxalic Acid Excretion in the Urine of Children, Amer. Jour. Dis. Child., December, 1915, p. 414.

[14] Hempelmann: Amer. Jour. Dis. Child., December, 1915, p. 418.

[15] Kowitz: Jahrbuch f. Kinderheilk, Berlin, October, lxxxii, No. 4, p. 261.

[16] Ross: Lancet, March 27, 1915, p. 654.

In nineteen other cases the infection of the urinary tract was due to the bacillus proteus vulgaris, which is usually a saprophyte. These complicated various diseases such as summer diarrhea. More boys than girls were found.

Respiratory Infections.—For establishing the diagnosis of influenza, Holt[17] says the organisms must be found in the secretions usually occurring in the bronchial secretions. Smears are unreliable. Cultures should be made and only media which contain hemoglobin will grow the bacilli influenzae.

The most significant manifestation of influenza, according to Holt, is the wide variations of temperature. Pneumonia or otitis would be the first conditions confused with it. There is much in a case of protracted influenza to resemble whooping cough, especially when several members of the family have it. In the differential count while both have a leukocytosis, the polynuclears in influenza with bronchitis rises to 70 per cent, while in whooping cough there is a very high lymphocyte percentage.

Diseases of the Osseous System.—An interesting rare condition is reported by Herrman[18] in which brittle bones are associated with a blue tinging of the sclera. It is an hereditary and familial disease. The relation of the blue sclerotics to fragility of the bones was first mentioned in 1900. In 1911 a series of cases were reported in one family in which out of twenty-nine individuals, thirteen had blue sclerosics and seven of these had multiple fractures. In Herrman's cases the bones were shown by Roentgen ray to lack normal density. The sclerotic has a pale azure or porcelain blue, sometimes a leaden blue. The fibrous tissue of the sclera is thin and the fibers deficient in number. There is no pigment present, but the tissue is unusually translucent so that the brown-black choroid in shining through the sclera causes a color interference. The author concludes that there is lack of lime salts of actual calcification and ossification. All connective tissue in the body lacks density.

Trusdell[19] has made observations on the late results in birth fracture of the humerus at the New York Lying-In Hospital. In twenty-four fractures occurring in twenty-one infants there was deformity more or less extreme. In the subsequent radiographs there has been a uniformly progressive cure of the deformity by nature until the bone previously fractured could not be told from the one on the opposite side of the body. Most of the fractures occurred during version with breech extraction. The treatment has come to be simply a fixation of the injured arm at the side of the body by a broad swathe of adhesive plaster around that side of the chest, the hand approximating the opposite shoulder. There has never been failure of union. Musculospinal paralysis is usual but temporary. Deformities are eliminated within two years, though there had been much displacement of the fragments.

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[17] Holt: Arch. Pediat., October, 1914, p. 724.

[18] Herrman: Amer. Jour. Dis. Child., March, 1915, p. 205.

[19] Truesdell: Arch. Pediat., September, 1915, p. 669.

In discussing scurvy, Brown[20] concludes that subperiosteal hemorrhage may be present though not shown by radiograph, for recently exaravasated blood is not very radiable and is shown only when well advanced and the clot organized. He states that the "white line" at the junction of the epiphysis and diaphysis is the first evidence of scurvy. This is shown by the Roentgen-ray plate. A high temperature with marked increase of the polynuclears occurs in late and severe cases, and apt to be confused with pus. Scurvy, rickets, tetany and beriberi are closely associated in production due to the disturbance in the balance of mineral salts.

Congenital depressions of the skull are not often seen and have no great significance, according to Goodman.[21] The parents often think that the child has been roughly handled during labor or afterward. It is due to intrauterine conditions, probably from an anomoly in the mother's pelvis and from softened fetal bones of the head. The depressions are usually in the parietal bones, and are usually spoon-shaped or angular. There is no symptomatology, and the depressions are usually filled out by the third or fourth year.

Chorea.—In an exhaustive article on chorea, Mackenzie[22] concludes that sodium salicylate, aspirin or antipyrin are the most useful drugs. Arsenic was not found so useful. In violent nervous cases hyoscin had to be used to produce rest. Drugs form only a small part of the treatment. Complete body and mental rest is necessary, with bathing for fifteen minutes twice a day, light diet and much milk and bowels kept open.

[20] Brown: Arch. Pediat., October, 1915, p. 744.
[21] Goodman: Arch. Pediat., August, 1915, p. 587.
[22] Mackenzie: Glasgow Med. Jour., June, 1915.

After chorea the child should not return to school for many months. The best treatment is prophylactic at the time of the first indication of motor disturbance.

Contagious Diseases.—During the course of diphtheria, especially in a case of late antitoxin administration, one is anxious about the condition of the heart. Hume and Clegg[23] assert "that any form of arrhythmia of the heart (except sinus arrhythmia) in diphtheria indicates that the heart muscle or nerves are involved in a pathologic process, however mild the illness may otherwise appear to be and that special cautions are necessary to keep the patient recumbent."

Anything that aids in the early diagnosis of transmissible diseases so that the case may be promptly isolated is of undoubted value. Herrman[24] has found that about 40 per cent of measles cases show specific tonsillar spots as early or earlier than Koplik's spots in the mouth. These spots must be looked for in a good light and they vary from two to thirty in number, from a pinpoint to a pinhead in size, round or irregular streaks, from a bluish gray to white. They are found very early and remain visible from one to three days.

Measles is capable of transmission after the appearance of the prodromal symptoms. This may be as early as five days before the cutaneous rash, according to Gray.[25] The height of the transmissibility is at the time of the appearance of the rash, and does not extend beyond seven days following the outbreak of the rash.

Zingher[26] has noted the beneficial effects at the Willard Parker Hospital from the injection of fresh human convalescent blood to cases of severe scarlet fever. Six to 8 ounces of blood given twice at four or five day intervals from scarlet fever convalescents have proved of life-saving value. The donor must be free from syphilis and tuberculosis. In the late septic cases he advises the use of fresh normal blood from a parent or relative. The injection is made intramuscularly. The blood after withdrawal is immediately citrated by the addition of 1 c.c. of a 10 per cent sodium citrate solution to each ounce of blood and then immediately injected. Convalescent blood will not keep after a month or two in the icebox, so that fresh blood is preferable.

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[23] Hume and Clegg: A Clinical and Pathological Study of the Heart in Diphtheria, Quar. Jour. Med., Oxford, October, 1914.

[24] Herrman: Amer. Jour. Dis. Child., October, 1915.

[25] Gray: Jour. Infec. Dis., November, 1915, p. 559.

[26] Zingher: Jour. Amer. Med. Assn., Sept. 4, 1915, p. 875.

The question of immunizing children against measles is considered by Herman.[27] He thinks it is worth while because the mortality in the registration area alone of the United States reported 44,080 deaths in the decade from 1900 to 1910, and because 95 per cent of the population are infected at some time. Infants under 5 months are relatively immune. Most all other children contract the disease. Under 2 months there is absolute immunity. Infants 6 or 7 months old have very light cases. One attack of measles usually protects for life. Herrman inoculated forty infants under 5 months of age with mucus from the nose of measles children, otherwise healthy, twenty-four hours before their eruption appeared. Most of the infants showed no marked reaction, fifteen had a rise in temperature, 100 to 101 degrees F. coming on from the eighth to the fourteenth day. In a few cases a small number of spots were seen on the face or body at that time. Of these forty cases, four over 1 year of age have since come in contact with measles and have not contracted it. Two others were reinoculated at about 2 years of age and did not react.

Poliomyelitis.—The relation of the organism causing experimental poliomyelitis to the disease of infantile paralysis is considered by Flexner[28] to be a direct causative one. The micro-organism cultivated from poliomyelitis tissues is a globular or oval one of very minute size and is filterable. The organism taken from the nervous tissues and kept for over a year, cultivated through many generations and dilutions when inoculated into monkeys is capable of causing a disease in monkeys accurately resembling the disease in children.

Flexner believes that it is possible, but highly exceptional, for the stable fly to withdraw the virus from the blood of the monkey and inoculate a healthy monkey which later shows the symptoms and lesions of the disease. A watery filtrate from the bedbug which has bitten an infected monkey injected into a monkey has caused the disease, but Flexner believes that these are highly exceptional infections. He states that the virus of the disease has been shown to enter and leave the infected person by way of the nasopharyngeal mucous membrane, not only in marked cases in children, but in the slight

[27] Herrman: Arch. Pediat., July, 1915, p. 503.

[28] Flexner: Johns Hopkins Hospital Bulletin, May, 1915, p. 180.

or so-called abortive cases and in healthy persons in intimate contact, even after several months. The patients who are not seriously ill form the greatest menace as carriers by discharging the microbes from the throat and nose secretions. The human subject, he thinks, possesses a high degree of immunity to the infecting organisms of poliomyelitis which explains the sporadic appearance of cases.

Epidemic Cerebrospinal Meningitis.—Fearis[29] has devised an instrument for swabbing the upper part of the nasopharynx which is the region favorable for the growth of the meningococcus. He uses it in examining the nasopharynx of contacts in epidemics of meningitis. It is necessary that in swabbing there shall be no contamination by the other bacteria of the mouth and fauces, that no injury be done to the tissues, and that the swab be accurately smeared over the surface of the Petri dish medium such as nasgar. A flexible spiral spring with swab on the end is fitted and hidden in a metal cannula so that it can be exposed when in position in the nasopharynx, immediately withdrawn into the cannula, and then removed from the mouth to the Petri dish and the media inoculated, placed in the incubator at 37 C. and later examined.

Congenital Syphilis.—The effect of combined use of neosalvarsan and mercury on the Wassermann reaction in congenital syphilis is as yet uncertain, but a recent report by Findlay and Robertson[30] gives fifteen negative reactions in forty-three cases at the conclusion of treatment. In six cases this was still negative from six to fourteen months after the last injection.

Comparatively little positive knowledge exists regarding the disappearance of a positive Wassermann in hereditary syphilis as a result of treatment. Findlay[31] comes to the conclusion in handling congenital cases that neosalvarsan intravenously, possibly in small doses, once or twice a week, with inunctions of mercury is the most efficient treatment so far as the mortality is concerned. In sixteen out of forty-three cases so treated the Wassermann reactions became negative and remained so.

Findlay advocates the antenatal treatment of pregnant women by intravenous neosalvarsan and mercurial inunction as having the greatest influence on the disease in the baby. This is a subject that can well be considered by obstetricians and pediatrists.

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[29] Fearis: British Med. Jour., May 29, 1915, p. 927.

[30] Findlay and Robertson: Quar. Jour. Med., Oxford, January, 1915, p. 175.

[31] Findlay: Glasgow Med. Jour., May, 1915.

Tuberculosis

D'Espine's sign is the presence of the whispered voice in the interscapular space and over the upper thoracic vertebrae. Whispered bronchophony has been known in physical diagnosis for some time but lately it has been accorded a place of definite diagnostic value in children with hilus disease, especially tuberculous bronchial glands. Stoll[32] concludes that it is suggestive of tuberculous inflammation of the tracheobronchial glands when found in a delicate child with other evidences of clinical tuberculosis. The sign is elicited with the child sitting, the head bent forward, arms folded across the chest and the stethoscope firmly pressed over the upper thoracic vertebrae and to either side in the interscapular space. The patient whispers "three thirty-three" or the word "tree." The final "e" of the word is heard prolonged as an echo.

Tuberculin Reaction.—Studies on the cutaneous tuberculin reaction in children are still frequent in the literature. Most investigators are agreed that it is rare to find a reaction in the newborn. Fishberg[33] thinks from the agreement in the number and proportion of the children reacting to tuberculin and who show tuberculous changes in the body that the reaction is specific. In the first five years of life Wollstein found 13.5 per cent of tuberculous changes in 1,320 necropsies. Burkhardt found 28 per cent. Other investigators found about the same. The number of reactions to tuberculin during the first five years in Fishberg's 588 apparently healthy children of nontuberculous parentage was about 25 per cent. From five to fourteen years 61.4 per cent react. These are children in New York tenements. European figures are higher than these. The reaction shows whether a person has ever been affected but most of these infections are harmless as they are not enough to cause phthisis. The large number of healed lesions on necropsy proves that tuberculosis usually heals spontaneously with mild infections in infancy and is an immunizing process, while later infections are apt to cause rapidly developing hematogenous tuberculosis with fatal outcome, such as tuberculous meningitis, acute miliary tuberculosis or acute tuberculous pneumonia.

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[32] Stoll: Amer. Jour. Dis. Child., September, 1915, p. 183.

[33] Fishberg: Arch. Pediat., January, 1915, p. 20.

Children who gave a positive tuberculin reaction during their stay in the Massachusetts General Hospital and who had at that time no suspicion of tuberculosis were followed up thereafter for periods under 4 years by Rogers.[34] These cases showed that before the age of 2 years a positive skin reaction seems to indicate that the child's life is apt to be short. The mortality among children up to 10 years of age who react to the von Pirquet test is much higher than that of normal children.

Ear, Nose and Throat

A New Tonsillar Affection.—In the American Medical Association Journal of February 20th, 1915, A. B. Middleton, M.D., reports a tonsillectomy in a child of eight years. The child had been ill for six years with anemia, malnutrition, adenoid symptoms, etc. Every three weeks she had so-called bilious attacks, but never a sore throat, though she was a mouth breather. The tonsils were enlarged and submerged. The right tonsil while being removed was seen to evolve a round worm, which was recovered and proved to be a female Ascaris lumbricoides about 1 1-4 inches long. The tonsil on section showed a cavity in which the worm had been imbedded probably for several years. The child immediately regained her health and has gained in weight.

Harper[35] advises in Vincent's angina, perchloride of mercury 1:100 painted once, then daily silver nitrate 30 gr to the ounce.

Five children with middle ear infection with Vincent's organism are reported by Adam,[36] all showed erosion of the external auditory canal. The prognosis, slight general symptoms, lack of contagion and lack of frequency resemble these phases of the disease as found in the throat.

Internal Secretions.—An interesting case of cretinism is reported by Haynes[37] in which on every occasion following excessive doses of thyroid gland extract there resulted an immediate loss of weight and the signs of hyperthyroidism. There finally developed signs of another glandular disturbance, acromegaly. The sella turcia was shown to be enlarged. The tolerance for glucose proved to be greatly increased. Great

[34] Rogers: Boston Med. and Surg. Jour., Feb. 4, 1915, p. 161.
[35] Harper: Glasgow Med. Jour., May, 1915.
[36] Adam: British Jour. Dis. Child., February, 1915, p. 40.
[37] Haynes: Amer. Jour. Dis. Child., November, 1915.

improvement followed the administration of a preparation of the pars intermedia of the pituitary gland. The child's welfare could be definitely affected by the alternate use of the extract of these two glands, when thyroid was given the child became worse, and when extract of the intermediate part of the pituitary was exhibited the child became much improved. This case seems to show the ill effects of excessive thyroid administration on the pitituary secretion, or that there was a coincident disturbance of both glandular activities. The writer believes that glandular extracts should be made from absolutely fresh organs and immediately desiccated

"Nervous cretinism" is regarded by McCarrison[38] to be a condition of congenital myxedema combined with congenital cerebral diplegia. The symptoms of cretinism, as a rule, are easily seen, but the nervous symptoms may predominate, in which case there is less stunting of the growth than in pure cretinism. The nervous system shows its involvement in variations from the slightest degree of paraplegia to the most intense grades of spasticity, athetosis, convulsions and idiocy. Nystagmus, rare in cretinism, is sometimes present in the mixed type. The cases may be hard to distinguish from "cerebral diplegia." The improvement under thyroid extract is of diagnostic value.

The diagnosis of status lymphaticus is stated by Thursfield[39] in an interesting consideration of the subject, to rest most on the discovery of an increased area of dulness over the manubrium of the sternum. The thymus enlargement is the most constant feature. The normal thymus gives a V shaped area of resonance not passing beyond the margins of the sternum, but when enlarged it passes from one-half to three-fourths to either side. Thursfield thinks the Roentgen ray does not show the difference between enlarged bronchial glands and the thymus. It is hard for me to see how percussion could detect the difference. But with a large shadow from either cause there is a tendency to unexplained attacks of dyspnea or to a persistently low temperature and intoelrance of exertion. The author regards status lymphaticus as probable. Thursfield is inclined to use pituitrin which is a remedy obviating the results of shock which he regards as present in fatal results of the lymphatic state. He advises the injection of pituitrin before giving an anesthetic to a child who is said to have thymic asthma.

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[38] McCarrison: British Jour. Dis. Child., December, 1914, p. 508.
[39] Thursfield: Brit. Jour. Dis. Child., November, 1914, p. 465.

Insanity in Children.—The usual type of mental affections in children is thought by Rhein[40] to be the manic depressive form of insanity. Besides his own cases, however,.he has collected from the literature, thirty-two cases of insanity of which thirteen were circular, eleven of the manic form and eight of the melancholic type. Insanity has always been thought to be rare, especially as asylums seldom have any children. The author believes this due to the fact that children are cared for at home. The youngest case of insanity on record is nine months. Berkham reported ten cases under 5 years, but most cases were between 10 and 11 years. All cases recover from the attack and few have any residual mental damage.

Cardiac Disturbances.—Talley[41] asks the question: Is a given heart murmur in a young child from acquired endocarditis or of a congenital nature? He states that rheumatic endocarditis is practically unknown under two years of age. Acquired endocarditis in infancy is secondary, most always, and the causative focus is easily found. So a cardiac murmur is usually functional or congenital. The functional irregularities of the heart are sinus irregularities, premature beat or extra systoles and a combination of both of these. Sinus irregularities arise in the sino-auricular node which is controlled by the vagus or inhibiting nerves of the heart. Sinus irregularity is frequent in normal infants. Premature beats or extra systoles are found in later childhood and in normal hearts more frequently than in diseased hearts.

900 Rialto Building.

[40] Rhein: Amer. Jour. Insanity, January, 1915, p. 472.

[41] Talley: Arch. Pediat., September, 1915. p. 655.

SOCIETY TRANSACTIONS

West End Medical Society

Louisville, Ky.

DISCUSSION

Multiple Births with Report of a Case of Triplets.—Dr. I. A. Arnold: I want to thank Dr. Read for the privilege of seeing his patient. The case was of especial interest to me, being the first and only one of triplets that I have ever seen. One peculiar feature which Dr. Read did not mention was that the woman had an enormously dilated transverse colon; it was apparently about four inches in diameter and occupied a position anterior to the uterine fundus; it seemed to be attached to the uterus, as it descended during the delivery. Possibly some adhesions existed between the colon and the uterus, and this fact may explain certain of the distressing symptoms which the patient exhibited.

I wish to commend Dr. Read on his excellent work in this case.

Dr. C. L. Nichols: I appreciate Dr. Read's excellent report. Probably few of us have had the good fortune to deliver living triplets. In thirteen years of practice I have never encountered triplets, and have had only four cases of twins. In two of these the delivery was easy, the children being smaller than in single births. In the other two the delivery was complicated.

Dr. E. H. Koch: Multiple pregnancy furnishes an interesting topic for discussion; it still remains a puzzle to medical science, that is why a woman should have a multiple pregnancy at one time and not at another, and why the same woman should have repeated multiple pregnancies.

I have never delivered triplets, but have had several cases of twins. All the labors were easy.

Dr. E. L. Heflin: Dr. Read is to be congratulated upon the outcome in his case; first, because the woman was a primipara, and second that she was forty years of age. Where women do not bear children until after the age of forty, labor in even single pregnancy is apt to be difficult and complicated; and in multiple gestation, especially where kidney complications develop as in the case reported of course the conditions are much more serious.

I have had quite a number of cases of twins, but have never delivered triplets.

Dr. H. J. Phillips: I also wish to congratulate Dr. Read upon his successful management in the case reported. I have never encountered triplets, but have delivered twins on several occasions. Dr. Read need not feel the least chagrined that he did not perfect the diagnosis of triplets before delivery, because doubtless many of us have failed to make the diagnosis of even twins before the first child was born, at least I have had such experiences. I have delivered premature twins as early as three and a half months, and on more than one occasion was not sure of the presence of two babies in the uterus until after the first one was born.

Dr. Read has reported a very interesting experience. I always act just as he did, that is in multiple pregnancy I always rupture the sac whenever I am ready without waiting for nature to do so. After waiting a reasonable time after birth of the first baby, which may be anywhere from five to twenty-five minutes, I rupture and prepare to deliver the second child.

It is unusual for twins or triplets to present in the vertex position. We oftentimes find the position reversed, but in the case reported all three children presented in L. O. A. position.

Dr. J. K. Freeman: Dr. Read has reported an unusual case, and there are some features about it which probably the majority of us have little positive information. I have never seen a triplet gestation, but like the others who have spoken I have delivered twins upon several occasions.

As to the cause of multiple pregnancy, or why single gestation should be the rule: This is a feature upon which our physiology is strangely silent. Whether there is a single ovum with a double germinal vesicle, or whether two or more ova are fertilized at the same time, are unsettled questions in physiology. However, I believe that both theories may be correct. For example, an ovum may mature and be extruded from each ovary simultaneously and if they come in contact with active spermatozoa, may both be fertilized, resulting in double or triple gestation as the case may be. Multiple gestation is common in the lower animals, especially in dogs and cats; but in these animals there is a difference in formation of the uterus from that observed in the female human being. In the bitch, for instance, a number of ova must mature at the same time, and one or more of them may be fertilized by each individual male that copulates with the bitch during the estrum, resulting in puppies which are white, black, spotted, long-haired, short-haired, etc.

It is strange that multiple gestations seem to "run in families," and the phenomenon can oftentimes be traced backward for several generations; on the other hand, it is equally strange that a woman may give birth to twins only once in her life, and there may be no family history of multiple gestations; again, the same woman may have twins several times. It has not been my experience that the delivery of twins is always easy. I have on several occasions delivered twins, and remember that a great deal of trouble was experienced in two of the cases; both babies presented transversely, and version had to be practiced; both were delivered breech first. In one case both the babies lived, in the other one was delivered dead, and the other is still living. It has been been my observation that in twin births one baby usually presents in cephalic and the other in breech position.

I have noticed that women pregnant with twins quite frequently suffer considerably from nervous kidney symptoms. The first case of eclampsia that I ever saw was in a woman with twin pregnancy. She had nearly reached normal term, when she developed symtoms of eclampsia and labor was artificially induced; she was delivered of premature twins.

As to making the diagnosis of multiple gestation: This has sometimes been to me quite a difficult matter. Dr. Read mentioned that he could not tell whether one heart sound was transmitted through the body of the fetus or whether there was a second or third child present; and that has been my experience. Variation in uterine conformation is indicative, but this may be due to many things, for instance to the presence of a fibroid tumor, fetal deformity, or there may be a double uterus. In certain instances where multiple gestation has been diagnosed, it was later found that the woman had a fibroid, or there was a double pregnant uterus. Of course, with a double uterus a woman may give birth to one child, and then later give birth to another, both at full term. Such cases are not as rare as we might think. Those of us who do abdominal surgery have found segmented or double uteri oftener than we thought they existed. However, this was not true in the case Dr. Read has reported, as there was a single placenta with three cords attached. It may be there was a single ovum with triple germinal vesicles, or three ova which became impregnated at the same time.

Dr. O. H. Kelsall: One feature about multiple pregnancies which makes delivery easy, is that the fetuses are generally of small size, as was true in Dr. Read's case. The point he mentioned about the influence of heredity in multiple pregnancy is emphasized by an experience of mine, in which I delivered a woman of premature twins. The husband remarked that his wife had given birth to twins once or twice before and that it was a characteristic of her family.

Dr. Read has given us a very interesting report. I do not know whether I have been fortunate or unfortunate, but after seventeen years of experience in hospital and private practice I have never been called upon to deliver a woman of even twins of viable age. I have seen three miscarriages of twins, but none at full term.

Dr. F. H. Johanboeke: In twenty years of practice I have had only one case of twin birth. In this case the babies were very large, one weighed ten pounds, the other ten and a quarter pounds. I delivered the first one with forceps, and the second child was extruded spontaneously feet first.

Dr. H. H. Grant: The question as to whether superfetation is possible in the human being has never been definitely settled. In the cases of supposed superfetation which have been reported, I think there was a second impregnated uterus.

With respect to the possibility of superfetation in animals as mentioned by Dr. Freeman: This is also not positively proved. The remarkable variations in colors of puppies, for instance, are features which I think cannot be attributed to secondary sexual congress. Such variations frequently occur in animals subjected to only one coitus, and this is particularly true in dogs and hogs. For instance, a sow may give birth to pigs of different colors, although bred to one male and perhaps with only one opportunity. The spotted puppies mentioned by Dr. Freeman were probably the result of some peculiarity inherent in the animal herself, rather than to her having had repeated sexual congress. For superfetation to occur in the human being would necessitate menstruation and ovulation after the first impregnation.

Multiple pregnancy is almost certainly due to the maturation of multiple ova. Usually only one ovary matures at a time and that comes from either one or the other of the ovaries, the other ovary not being active at that particular time. However, some remarkable anomalies have been reported; women who were supposed to be without ovaries have borne children, and one must be prepared for almost any phenomenon that may be observed.

I have had little or no experience in obstetrics during recent years, and in my former practice I recall only a few cases of twin pregnancy; I have never encountered triplets. I delivered several women of twins, and in two instances I remember delivery was accomplished without any difficulty; in each case both children are still living.

It seems to me that Dr. Read's management of this case was exceedingly fortunate, and the favorable result was undoubtedly due to his good judgment.

Dr. J. B. Lukins: Multiple pregnancy is an interesting subject, and this is especially true of the case reported by Dr. Read. I have had no experience whatever with triplets, and very little with twins.

Dr. Read mentioned the difficulty of making a correct diagnosis of triplets, and he should certainly not blame himself for his failure to do so. It is sometimes difficult to certainly diagnose twins prior to delivery. Quite frequently the interne at the Louisville Public Hospital has called me over the telephone, or has told me while there, that a certain woman in the ward was pregnant with twins; that he could hear two distinct heart sounds; but in every instance, with the exception of one, the gestation was found to be single.

On two occasions all the known methods including the X-ray were used in trying to perfect the diagnosis. In one case the X-ray operator thought twins were certainly present, but when the woman was delivered there was only one baby. In my opinion the X-ray as an aid in obstetrical diagnosis is of very little practical value, although it is being extensively used in many of the large obstetrical clinics. Some men report considerable success with it in obstetrical diagnosis, not only as regards multiple pregnancy, but as to position of the fetuses.

Dr. Read is especially to be congratulated in having carried this woman to almost full term, when she undoubtedly had a rather severe form of toxemia. It is difficult to carry a woman through even single pregnancy when she has albuminuria, high blood pressure, and other symptoms of toxemia. I have never had under observation a patient with multiple pregnancy showing toxemic symptoms who was carried to full term. Dr. Arnold will remember one distressing case that we had to deliver prematurely; she had about the same degree of toxemia as Dr. Read's patient.

Like many other things in medicine, we know little or nothing about the cause of multiple gestation. Why it should occur in one woman and not in another, why one pregnancy is single and a subsequent one multiple in the same woman, etc., we do not know.

Dr. H. L. Read (closing): I wish to thank the gentlemen for their liberal discussion. As stated by Dr. Arnold, this woman has a very large transverse colon. I did not mention this fact in my report, because it had no particular bearing upon the successful delivery of triplets. At the present time there is considerable abdominal distension, although the abdomen appeared perfectly flat after delivery excepting when in the standing position.

The history is that a large majority of cases of multiple pregnancy never reach maturity, or to such stage that the children are able to live. Many of the patients abort even in twin pregnancies and delivery of living triplets at about normal term is exceedingly rare.

As to Dr. Freeman's remarks concerning the possibility of three germinal spots or "yolks" in one ovum: I do not believe that ever happens, at least I can find no authority for such a statement. Some of our best authors do not even believe that two embryos can come from one ovum. Some of the text book authors say that multiple pregnancy arises from two or more ova present at a single or immediately subsequent coitus. None of them refer to multiple germinal spots in one ovum.

In my opinion it would be impossible to determine whether these three children came from one, two or three ova, so far as the appearance of the placenta is concerned. In this case the placenta was normal in shape and size, the three cords were exactly alike and were attached about two inches apart. I do not believe the pregnancy was from three germinal spots or "yolks" in one ovum; there were probably three separate and distinct ova. In a certain percentage of cases of multiple pregnancy the fetuses are all in one sac, but there were three separate sacs in the case reported.

In regard to the diagnosis: While I have seen but a few cases of twins, it seems to me an accurate diagnosis ought to be made at term in every case by the signs and symptoms present. The two fetal heart sounds can always be heard and distinguished from each other. In the case reported, by the simultaneous use of two stethoscopes, one upon either side of the patient, I believe the diagnosis of triplets could have been made. It was impossible, however, for one ear to distinguish three heart beats at the same time, and I thought one of the sounds was transmitted through the body of the child.

As regards superfetation: I do not believe this is possible, at least in the human being. I do not believe that a woman can be impregnated by one man, and then later be impregnated by another. As a rule ovulation ceases when the woman becomes pregnant.

In the majority of multiple births, the first child presents in the vertex position, the other in the breech or some other position.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE

Suitable Food for School Children.—In the belief that a hot dish at noon, if only a bowl of milk soup or a cup of good cocoa, is highly important to school children, many schools throughout the country are either supplying a regular hot luncheon to school children or are providing a single hot dish with which the children coming from a distance can supplement the cold food in their lunch baskets. In most cases the children bring money with them and buy the dishes at cost price. Those in charge of the lunch room see to it that nothing is for sale that would be hurtful to the children, and direct them in their purchases so that they will not buy merely sweets or pastry. This overcomes the danger of the child's spending his money unwisely or patronizing an insanitary shop.

To assist schools wishing to undertake this desirable activity, through teachers or groups of cooperating mothers, the home economics specialists of the U. S. Department of Agriculture, in Farmers' Bulletin No. 712, suggest the following economical and easily-prepared bills of fare for the school lunch:

1. Vegetable-milk soup, crackers, rolls, fruit, plain cake.
2. Meat and vegetable stew, bread and butter, sweet chocolate.
3. Boiled custard, lettuce sandwiches, fruit, cookies.
4. Dried codfish chowder, crackers, fruit, maple-sugar sandwiches.
5. Bean soup, crackers, baked apples, sponge cake.

In addition the school can serve hot cocoa, cooked fruits, berries, and liquid or other foods which it is difficult to carry in baskets. Most any school by the use of paper cups can make good milk chocolate available to children at noon. The school can also place on sale good simple cookies, swieback, or crackers supplied from the outside.

As the serving of an entire luncheon calls for considerable equipment and dish washing, many country schools will find it easier to supply simply one hot dish, a cup of cocoa, or a glass of good milk. The milk could easily be provided through arrangements with parents or nearby farmers and is particularly useful to children in warm weather when it is impracticable for them to bring bottles of milk in their baskets.

In a number of city schools the pupils are provided with trays and help themselves to foods placed on the counter. At the end of the meal they return the trays and dishes and thus reduce the amount of help required. In some large cities a trained supervisor is employed to regulate all the public-school lunch rooms. In other schools the preparation of lunch is made a practical exercise for classes in cooking and domestic science.

It is in the small country schools with only one teacher, however, that the midday meal presents the most difficult problems. Only a teacher with ingenuity and enthusiasm for her work can carry out the plan, and even with such a teacher the active cooperation of parents is highly important

The simplest equipment includes a large kettle, measuring cup and spoons, paring knife, mixing spoon, dish-pans, and towels. The pupils should be willing to bring plates ,cups, bowls, and spoons from home. The boys and girls can easily make curtained shelves for the utensils. A fireless cooker, which permits the preparation of meat stews, meat and bean soups, and cereal mushes can easily be made by the pupils as a class exercise.

The older girls, taking turns in groups, commonly prepare the special dish for the day. In good weather the luncheon can be served out of doors, but at other times it may be necessary to serve it on the children's desks. This will not be objectionable if the desks are first cleaned and covered with clean paper or paper towels, and if the building is well ventilated and screened against flies. Safe water for drinking, washing hands, cooking and washing dishes is essential, and any water that is at all doubtfull should first be boiled.

The Noon Meal at Home with Special Reference to the Children.— There is no doubt why the ordinary family dinner should not be suitable for school children or served in a way that adapts it to their needs, according to Farmer's Bulletin 712, "School Lunches", just issued by the U. S. Department of Agriculture. The usual first course of meat and vegetables contains nothing except the meat, which can not be given even to the youngest children. The vegetables, providing they are carefully prepared by simple methods, are specially needed and can often be made attractive to children by being served with a little meat gravy. As a substitute for the meat itself, milk, can be provided in the case of the younger children. These aricles, with the bread and butter, provide most of the food needed.

The dessert course is suitable for children as well as for grown people unless it consists of rich pastries or puddings. The latter are not considered wholesome for children, if for no other reason than that they are likely to lead to overeating. Such desserts as fruit, fresh or cooked, with cake, cereals with milk or cream, and sugar, custards and custard puddings, gelatin dishes, simple ice cream, water ices, and other simple desserts may be given.

Whether or not the family meal is healthful for children depends not only on the food materials selected, but also on the way in which they are cooked. Simple methods are to be preferred from the standpoint of health as well as from that of the housekeeper's time. All dishes that are likely to contain overheated and scorched fats, such as foods carelessly fried in a pan in a small amount of fat should be avoided. Deep-fat frying is open to fewer objections, since, if properly done, foods will absorb little fat and the fat will not scorch. Vegetables cooked in water or in their own juices and seasoned with salt and a little butter or cream are easier to prepare than those that are served with white sauce, scalloped or cooked in other elaborate ways.

What is said above apples equally to all meals. There is, however, one special precaution that applies to the noon meal when it is hurried. This refers to tough, hard foods that are likely to escape proper mastication. It is a mistake to think that the foods given to children must always be soft or finely divided, for children's teeth need exercise quite as much as their muscles do. When time for eating is limited, however, it is well to omit foods that are difficult to chew, and in extreme cases it may be necessary to serve only soft or finely divided foods, sandwiches made from crustless bread with finely chopped fillings for example. Before resorting to this, howeve, it is well to make sure that the time for eating and for insistence on good table manners is not unnecessarily cut short. The advantage of putting the meal on the table promptly and of having foods served in individual portions, or at least ready to eat when they are brought to the table, should be kept in mind. To have the meat already sliced and the dessert in cups instead of in one large dish from which individual portions must be served, and to follow the same general plan with other foods, may change a hurried meal into one at which there is plenty of time for attention to details essential to health and good manners.

If special lunches, different from those prepared for the family in general, are to be given to school children, the following are suggested as bills of fare. They are only typical and many others might be given which would be just as good.

Suggested Bills of Fare for the Home Lunch.

1. Eggs, boiled, coddled, poached or scrambled, bread and butter; spinach; or other greens; cake.

2. Beef stew with vegetables; milk; crisp, thin tea biscuits, honey.

3. Dried bean or pea puree; toast; baked apple; cookies.

4. Vegetable-milk soup; zwieback; rice with maple sugar and butter or with milk or cream.

5. Potato chowder; crackers; jelly sandwiches.

6. Cold meat; creamed potatoes; peas; bread and butter; frozen custard or plain ice cream and plain cake.

7. Lamb chop; baked potatoes; bread and butter; sliced mixed fruits; cookies.

8. Baked omelet with spinach, kale or other greens; bread and butter; apple sauce; cake.

9. Milk toast; string beans; stewed fruit; cake.

10 Boiled potatoes; codfish gravy; bread and butter; lettuce; custard.

Cubic Air Space for Institutional Bottle-fed Infant.—Thirty-three answers received by T. S. Southworth (Arch. Pediat., 1915, xxxii, 641) in reply to questions addressed to members of the American Pediatric Society show that the majority (twenty-one in number) of the hospitals and institutional wards for infants from which reports of cubic air space were received provide 1000 cubic feet and upward of air space for each inmate. Only five reported 600 cubic feet or less. Even with 1000 or more cubic feet of air space, free ventilation is deemed highly important, and as the space decreases such free ventilation becomes more and more imperative. No allowance of cubic air space is at present made for the necessary attendants in wards. Reduced cubic air space means less square feet of floor space and less separation between cribs, with proportionately increased opportunity for the spread of cross-infections. There is a growing belief that even with free ventilation separation of beds plays as important a role as cubic space. Such adequate separation, however, is only attainable with large cubic air space. On account of their handicaps, bottle-fed infants are more liable to require more cubic space than nursing infants. Bottle-fed infants require as much cubic space as so-called sick, "medical," or "surgical" cases among infants. The majority of pediatric physicians believe that infants should have as much cubic air space as adults, if not more, and this is especially true of bottle-fed infants, because they are more susceptible to infection, suffer in their nutrition in confinement, and notoriously do badly in all save the best equipped institutions. Bottle-fed infants when retained for any considerable length of time in hospitals or institutions cannot properly be classed as well infants, because a considerable proportion of them suffer both in their digestion and nutrition, as well as from acute inter-current affections, and therefore require unusual attention in their feeding and general nursing care. Limited cubic air space, involving limited floor space, is an important contributory factor in the high mortality of artificially fed infants, and such crowding in limited space is very commonly the concomitant—if not in itself a cause—of faulty hygiene, insufficient care and inadequate nursing. Even with a liberal allowance of cubic air space free and abundant ventilation is of equal importance.—Amer. Jour. Dis. W. and Child.

Ethylhdrocuprein in Scarlet Fever and Measles.—Arthur D. Hirschfelder and Frederic H. Schultz (Berliner klinische Wochschr., Sept. 20, 1915) observed a series of cases of scarlet fever, part of which received treatment with ethylhydrocuprein and part of which were reserved as controls. The new drug exerted no beneficial effect, in fact the duration of the treated cases was somewhat longer than of the untreated group. In a similar series of measles the drug gave evidence of being of value, for the duration of the disease was reduced to an average of less than four and a half days compared with almost eight days for the untreated cases. The doses used ranged from 0.1 to 0.5 gram, three times a day, depending on the age of the patients.

Whole Milk Feeding of Infants.—The methods of feeding infants, who for some reason, good or bad, are compelled to forego their natural means of nourishment and are condemned to artificial feeding, are many and various. There are physicians who pin their faith to one method and others who stoutly aver that another is the best. There is no agreement on any one form of artificial feeding. Eric Pritchard of London, England, who is one of the chief British authorities on the rearing of infants, has a paper in the January number of American Medicine criticizing the citrated whole-milk method of feeding. In the main he agrees that this gives good results, but he does not believe that it gives the best results. After many years of experimentation in his Infant Consultation at Marylebone, Pritchard has come to the conclusion that provided one is familiar with the principles of physiological feeding it makes very little difference what food one employs; whether, for instance, one uses dairy milk, so-called, dried milk, or condensed milk, provided certain essential conditions are complied with. These may be stated as follows: (1) The necessary elements for growth, maintenance, heat production, energy production, and the elaboration of secretions must be supplied in the proportions and in the quantities required in each particular case. (2) These elements must be presented in a form capable of being digested and assimilated, and otherwise suited to the special physiological make-up of the infant to whom they are supplied. (3) The food must be of such a nature as to exercise and develop the latent digestive capacities preparatory to a more extensive dietary. After discussing favorably the dried milk method of feeding infants and emphasizing the point that there can be no such thing as a "best" food for infants, for the reason that the best food for each individual infant is that which is best adapted to its general physiological make-up, and this will be different in each case—Pritchard concludes, with regard to the citrated whole milk method, that it is physiologically unsound, because it allows no latitude for adaptation to the digestive, assimilative, metabolic, and secretory activities of the individual baby and that its use implies obligatory modification on the part of the infant. If the principles of percentage feeding are understood, he says, synthetic foods can be prepared in a great variety of ways to satisfy the physiological requirements of particular babies.—Med. Record.

Infantile Scurvy.—The pathology of infantile scurvy is almost entirely devoted to a description of the lesions of the bones. On the clinical side, attention has been focussed on the evidence of hemorrhage—in the gums, beneath the periosteum, in the urine, etc. A. F. Hess (Jour. A. M. A., 1915, lxv, 1003) attempts to show that both the pathology and the symptomatology have a broader scope and that the heart is not infrequently involved. In several instances definite cardiac enlargement was ascertained by means of physical signs and Roentgen examination. Necropsies also show that the heart in some cases is hypertrophied and dilated. The examinations made during life, as well as those carried out after death, demonstrated that this enlargement was mainly of the right ventricle. Edema is almost always present in some degree. This occurs early in the course of the disease and involves most frequently the eyelids. It is often manifested as a firm edema over the lower end of the tibia, infiltrating the skin, and is readily overlooked, as it does not pit on pressure. This extravasation, which is due to nutritional disturbance of the smaller vessels, may also infiltrate the muscles. When this occurs in the thigh and causes swelling, it may be mistaken for the typical subperiosteal hemorrhage. It would also seem probable that the nerves are involved in infantile scurvy. The knee-jerks are increased and there are indications of superficial tenderness of the limbs and neurodema of the optic discs.

In the light of this symptomatology and pathology, infantile scurvy assumes actual relationship to beriberi, in which the right heart is also hypertrophied and the nerves invariably involved. This correlation was emphasized still further by a dietetic test modeled after the treatment of beriberi. The addition of middlings—the pericarp of the wheat—caused in many instances a prompt amelioration of the symptoms, although it did not suffice to cure the disorder. This indicates the advantage of giving a cereal which contains the outer layers of the grain when the diet includes no other antiscorbutic food.—Amer. Jl. Dis. Women and Child.

The Orphans of New York.—Why, asks Leslie's for February 10, 1916, are the orphan wards of New York City compelled to live in filthy, unsanitary private institutions where they are overworked and underfed, and where no vocational training is given to fit them for life? Why does the State Board of Charities still give its certificate of approval to such institutions after Commissioner of Public Charities John A. Kingsbury has investigated them and reported that they fail to maintain a minimum standard of care and decency? The answer is "politics," which continues to be the enemy of efficient government. Mr. Kingsbury asserts that a year ago eighteen private institutions caring for 5,100 city wards at a monthly cost of $61,000, were in an unfit condition. By refusing to send more children to such institutions, he has been able to restore eight of these to the approved list. The first institution to which the department refused to send any more children sheltered 350 boys and girls, 220 of whom were city charges Not a room, hall or closet was clean, the plumbing was old, dirty, and foul smelling, all beds were infested with bugs and without pillows or springs, with mattresses torn and dirty. The law forbids the Commissioner of Charities to pay any public moneys or commit children to any institution which has not the certificate of approval from the State Board. At the same time he is prohibited from withholding funds from institutions which have this certificate, or transferring children from them, however unfit they may be. Because of political pressure the State Board of Charities continues to give its approval to ten unfit institutions caring for 2,300 babies and growing boys and girls at a cost to the city of $26,000 a month. And the hands of an honest commissioner of public charities are tied. Shameful.—N. Y. Med. Jour.

Composition and Preparation of Protein Milk.—A. M. Courtney and H. L. Fales (Amer. Jour. Dis. Child., 1915, x, 172) say that the chief variation in the composition of protein milk is in the fat. Uniformity is secured not only by the use of ingredients of uniform composition, but, what is much more important, by the exercise of great care in the handling of the curd. It should be suspended for a short time or allowed to rest for fifteen minutes on the sieve before manipulation to drain off the whey; care in pressing the curd through the sieve is also essential. Since the value of protein milk is in large measure due to its low sugar content, the washing of the curd with water is a useful means of removing an additional amount of sugar. When properly prepared the amount of protein milk is quite constant and is usually somewhat greater than that of the original milk; it is nearly all casein. If the buttermilk is added while the curd is being rubbed through the sieve, it is unnecessary to repeat this part of the process. In the ash of protein milk the amount of calcium and phosphorus is slightly greater, that of sodium, potassium and chlorin is less than in whole milk, being reduced to a little more than one-half the proportion present. Certain things are to be avoided in preparing protein milk: (1) stirring too much or too long while adding the rennin; (2) leaving the milk during curd formation in a cold place; (3) any unnecessary handling of the curd in straining off the whey or in washing or in pressing through the sieve; (4) subsequent heating beyond that required in feeding. The exact process now employed at the Babies' Hospital is as follows: A quantity of whole milk, usually

8 or 10 liters, is heated to about 100 degrees F. and into it is gently stirred for a moment one junket tablet, dissolved in a small amount of water, for each liter of milk. The milk is left standing, covered, at the temperature of the room, usually about 70 degrees F. After standing for thirty minutes the coagulum is poured on a doubled piece of ordinary cheese-cloth and allowed to remain for fifteen minutes, the cloth resting on the sieve through which the curd is later to be pressed. The cheese cloth is then gently manipulated for a few minutes to complete the removal of the whey. The curd is now washed twice, using each time about one-fifth as much water as the original amount of milk taken. The water is poured on the curd, which is then gently manipulated for two or three minutes. The curd is then transferred to the sieve and pressed through it with the gradual addition of half as much buttermilk as the volume of whole milk taken. Boiled water is then added to make the volume equal to that of the original milk used. Great care must be taken in pressing the curd through the sieve lest the fat be transformed into butter, which often adheres to the sides of the utensil or floats on the surface of the milk. This is avoided by rubbing gently in one direction, the rotary motion being almost certain to form butter. A fat determination in such a sample is manifestly unreliable. The composition of protein milk obtained from all the writer's analyses when made as above described is: Fat, 3.0 to 3.50 per cent; sugar 1.8 to 2.0; protein, 3.60 to 4.00; ash, 0.65.—Amer. Jl. Dis. Women and Child.

Notable Case Seen in Pediatric Practice.—Ochsenius, a pediatrist of Chemnitz, states some cases of unusual interest seen by him in the past five years. The first was a case of generalized vaccina in a rachitic child of two years. The four inoculation pustules pursued a normal course, but after vaccination, there was fever and new pustles appeared over most of the surface, with four pustles on the tongue, two of which occupied the tip. The organ became greatly swollen, so that for several days the child lived on liquid nourishment. The author can find no mention in recent classic works of vaccina of the tongue. Another case was one of measles occurring in a six-year-old boy. Not long before the outbreak of the disease, a brother had slapped his face so hard that the print of the hand remained on the surface. When the rash appeared soon afterward it was partly manifested by an area which corrensponded exactly to the palm and finger of the offending hand. The phenomenon was only an illustration of a general law that a measles eruption is often strongly influenced by mechanical factors.—N. Y. Med. Jour.

BOOK REVIEWS

The Practitioner's Medical Dictionary, containing all the words and phrases generally used in medicine and the allied sciencics, with their proper pronunciation, derivation, and definition, by George M. Gould, M. A., M.D., author of "An Illustrated Dictionary of Medicine, Biology, and Allied Sciencies," "The Student's Medical Dictionary," "Pocket Medical Dictionary," etc. Third edition, revised and enlarged by R. J. E. Scott, M.A., B.C.L., M.D., editor of Hughes' "Practice of Medicine," Gould and Pyle's "Cyclopedia of Medicine and Surgery," etc. Based on recent medical literature, with many tables. 892 pages. Flexible cloth and leather, round corners, marbled edges. Cloth $2.75, Thumb indexed $3.25; Limp leather $4.00, Thumb indexed $4.50. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, Publishers.

During the past, we have had occasion several times to review copies of Gould's Medical Dictionaries and always with hearty commendation, and we take occasion to do so again and with good grace, for the latest edition of the Practitioner's Medical Dictionary is more than a reprint, in fact, it is almost an entire new work. The publishers realized that the revision was so great, that it could only be properly made by resetting the type throughout, and this left the editor absolutely free to include approximately 20,000 new words.

This new edition of Gould's Practitioner's Medical Dictionary is intended to provide a modern up-to-date scholarly and reliable dictionary for physicians and medical students and it pretty thoroughly fulfills the intentions of the editor and publishers. We regret to see the definition given of such simple English words as "absorb, actual, acrid, bleach, jabber," and the more important new words such as "deamination, deaminization, trophotherapy and trophodynamics," etc., omitted. In this revision of the Practitioner's Medical Dictionary will be found the pronounciation and clear and concise definition of upwards of 70,900 current words. The pronounciation is indicated whenever it is not well evident and accent marked in all of the main titles and most of the sub-titles. That improvement can be made in so technical a book as the Medical Dictionary is shown by the excellency of this publication, which has just been sent out by the publishers. It is handsomely well bound in serviceable limp marble edges and thumb indexed. It weighs only 2 1-4 lbs.; the dimensions 8 3-4, 6 1-4 by 1 1-4 inches, and it is a worthy successor to the several editions of Gould's Medical Dictionaries, and it gives us pleasure to again commend this dictionary, to authors, writers and physicians, and we congratulate Dr. Gould as the most prolific lexicographer, as well as on the practical usefulness of this volume, and commend the publishers for the elegant shape in which they perform the mechanical part of the publication.

Case Histories in Pediatrics, a new book on diseases of children by John Lovett Morse, A.M., M.D., Assistant Professor of Pediatrics, Harvard Medical School, Associate Visiting Physician at the Infants' Hospital and at the Children's Hospital, Boston, containing 630 octavo pages and a few illustrations. Price, express paid, $5.50. W. M. Leonard, Publisher, 101 Tremont Street, Boston.

The appearance of the second printing of the second edition of Case Histories in Pediatrics by John Lovett Morse is a welcomed volume to the reviewer's table. The first edition of this work appeared about four years ago. The first printing of the second edition about two years ago, which was an increase over the first edition of

100 clinical histories in Pediatrics which made the second edition about twice the size of the first, and now we have the second printing of the second edition. An introductory chapter, in itself practically a small book upon diagnosis in diseases of children, entitled, "The Normal Development and Physical Examination of Children," was one of the most prominent features of the new edition. This chapter is fully illustrated by photographs taken in the course of the author's work, which accurately illustrates the text. The merits of the Case History Book is now well known. It supplements the systematic book in which diseases are described, and brings to the physician cases exactly as he will find them in his daily work. This book taken as a whole, presents a post-graduate clinical course in the diseases of children. Dr. Morse devotes much space and attention to diagnosis, which is thoroughly discussed by naming diagnoses, which might with some reason be made eliminating each in turn by careful reference to clinical signs, terms and symptoms, the clinical terms being that which cannot be set aside and which all symptoms support.

There is a vitality in this work which is refreshing. It deals with actual conditions, as the Doctor meets them in daily practice; it is absolutely true throughout, without possible error or misstatement. The book is original and thorough and the general practitioner can look to it for helpful suggestions as to a consultant and not be disappointed. It gives us much pleasure to commend this valuable work.

Changes in the Food Supply and Their Relation to Nutrition, by Lafayette B. Mendel, Professor of Physiological Chemistry in the Sheffield Scientific School of Yale University. Price $ .50. The Yale University Press, New Haven, Conn., Publishers.

Estimates based on increase of population, reserve arable lands and increase of productivity, indicate that the world will soon be up against a serious problem by the end of the present century, that of getting sufficient food. Improved transportation facilities, with the latest scientific methods of preservation and the marked changes in dietetic customs, as the lessened use of meat and eggs, the great increase in the use of sugar and the more general availability of fresh vegetables or canned fruits, etc., in winter, has often been discussed by the economist. In this little book, perhaps for the first time a physiological chemist of note discusses the effect upon the diet of this country of commerce which provides us with eggs from China and preservative methods which can keep perishable commodities in good condition for two years. An interesting feature of the discussions recorded is that dealing with reforms in diet necessitated by economic conditions, such as those produced in Germany by the present war.

Prof. Mendel mentions proso millet and kaoliang as cereal foods available for coming into general use, and the latter can be cultivated in regions where Indian corn is indigenous. Both of these cereals have been experimented with as table foods at the South Dakota Agricultural Experiment Station. It is clear from the teaching of this author that the limit of food production to support the human race will exceed the calculations of food economists.

Case Histories in Medicine, Illustrating the Diagnosis, Prognosis and Treatment of Disease, by Richard C. Cabot, M.D., Assistant Professor of Clinical Medicine, Harvard Medical School, third edition, revised and enlarged. Octavo 640 pages, handsome cloth bindings, $3.00. W. M. Leonard, Boston, Publisher, 1915.

Dr. Cabot records in this volume the case histories of 100 patients, 30 cases of infectious diseases, 20 cases of diseases of the gastro-intestinal and biliary tract, 6 cases of diseases of the urinary tract, 9 cases of diseases of the circulation, 5 cases of diseases of the respiratory system, 15 cases of diseases of the nervous system, 8 cases of diseases of the lymphatic and ductless glands, 6 cases of diseases of unknown origin. A complete clinical history of each case is recorded; following this are arranged a series of questions covering the more important points of each case with answers. After this is the diagnosis of the cases discussed and the prognosis outlined and the treatment given. It is a most practical and handy volume. This volume taken as a whole, presents a post-graduate clinical course in general medicine. There is a phase of clinical teaching outlined in this work which is refreshing. It deals with actual conditions as the physician meets them in his daily practice. It is a work that the general practitioner can refer to for assistance and enlightenment wthout disappointment. Here he will find helpful suggestions which will help him over many hard places, and like all of Leonard's case history series, it is a valuable work and one which we have great pleasure in commending.

The Physiology of the Amino Acids, by Frank P. Underhill, Ph.D., Professor of Pathological Chemistry, Yale University. Price $1.35. Yale University Press, New Haven, Conn., Publishers.

Professor Underhill carefully reviews the literature which has appeared in the past on the physiology of the amino acids and his aim in presenting this volume is to gather together in one place the results which have thus far been obtained in the field of biochemistry of the amino acids, and present it in such shape as to afford the busy practitioner and others whose resources for consulting original communications are limited, and to give the physician an opportunity of gaining a knowledge of the present-day problems in this field of nutrition.

Prof. Underhill in summarizing the results of research in this branch of chemistry makes it a point to keep the needs of the clinician in mind. There are few branches of organic chemistry not directly applicable to diagnosis which have so important a bearing on medicines as the physiology of the amino acids. To be appreciated, this book should be read in its entirety. The demolition of the protein molecule into amino acids is graphically and succinctly explained, and the significance of the bearing of amino acids to nutrition has not been sufficiently appreciated until the immediate present, so that no compilation has existed furnishing an adequate conception of the role of the amino acids, and we may safely assume that the role of the proteins in nutrition is that of the amino acids.

Sex Problems in Worry and Work, by William Lee Howard, M.D., Price $1.00. Published by Edward J. Clode, 156 Fifth Ave., New York. 1915.

Dr. William Lee Howard presents in this little book of 200 pages facts as they are and speaks from knowledge gained through years of study and experience in the great hospitals of the world. He shuns no details and presents a clear cut analysis of the wages of sin and ignorance. In this little volume of 200 pages, the author's purpose is to show how the mental weeds of a personal nature in man and woman start, how the brain cells are packed and crowded with harmful impressions; how it is impossible to get the best out of us under such stultifying conditions. Dr. Howard presents sex knowledge judiciously which is the greatest insurance to the development of sterling manhood and womanhood. It is the duty of every man and woman to be informed upon the subject of sex and the care of the body. The author states in his preface, "I want to make clear to the world through these books that right sex living is of as much, if not more, importance than right physical living; that sex laws must be as well known and observed as those of eating, sleeping, and the general rules for bodily health."

Beauty a Duty.—The Art of Keeping Young, by Susanna Cocroft, Author of "What to Eeat and When," "Personal Hygienc," "The

Reading of Character through Bodily Expression," etc., $2.00. Published by Rand McNally & Co., 536 S. Clark St., Chicago, Ill.

This work is from the pen of one of the leading authorities on physical culture in this country, and no other work that we have examined presents the subject in such a clear, succinct manner. Just good common sense is dicsplayed on every page of this handsomely bound volume, nearly 400 pages, printed on heavy paper and beautifully illustrated. This work treats exclusively on the cultivation of beauty, with special chapters on the proper care of the hair, eyes, teeth, hands, feet and complexion, and should have a personal appeal to the women of America who desire to always appear at their very best. Considering the splendid character of the published volume for which the publishers are to be commended, and the contents of the text, the price is remarkably low for such a handsome volume.

Sugar and Salt—Foods or Poison?—By Dr. Axel Emil Gibson. Published by the author, 519-20 Chamber of Commerce, Los Angeles, Cal. 1913. Price, paper cover, 85 cents.

This is a handsomely printed brochure of 130 pages and its contents are "A warning to the careless eater." The author having discussed the sugar and salt problem in an entirely new light, the subject is examined from every angle and view point, and the deductions are at once original, scientific and simple. The book reads like a story.

Eppinger and Hess.—Vagotonia: A Clinical Study in Vegetative Neurology. By Dr. Hans Eppinger and Dr. Leo Hess. Translated by Walter Max Krauss, A.M., M.D., and Smith Ely Jelliffe, M.D., Ph.D. Pp. 92. New York: Nervous and Mental Disease Publishing Co. 1915. $1.00.

The authors describe a series of symptoms caused by a hypertonic condition of the vagus nerve. Patients suffering from this disorder are abnormally sensitive to pilocarpine, which produces sweating, saturation, hyperacidity, eosinophilia, asthma, slow pulse, and pulse constipation.

There is a "vagotonic disposition" shown by large beautiful eyes due to widening of the palpebral fissure, thick lips, plump nose, somewhat enlarged cervical glands, moist skin, comedones, a thick skin over the palms, and cyanotic areas chiefly over the back, head, face, and feet. Many other signs of vagotonia are described, one of the most typical being "the much diminished sensitiveness of the posterior pharyngeal wall, and of the entrance to the larynx of tactile stimuli."

Vagotonia is given as the cause of many abdominal symptoms of obscure origin, such as gastric hypersecretion and hyperacidity, pylorospasm with increased peristalsis and antiperistalsis, constipation, diarrhoea, and spasm of the gall bladder and bile ducts. Persistence of the thymus is a frequent occurrence, and the authors consider that as "lymphatism is a partial manifestation of constitutional inferiority, and is frequently associated with developmental anomalies, so do we believe that vagotonia is a partial manifestation of an inferior organism." The symptoms disappear or are alleviated by small doses of atropine. The monograph is well worth reading for its suggestiveness alone, and comes opportunely at a time when research is required on the subject of visceral neurology. The translators, Dr. Kraus and Jelliffe, have produced a very readable work, although it contains not a few Americanisms.

PEDIATRICS

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EDITORIAL

PHYSICAL EDUCATION AS AN INVESTMENT

The universal interest in popular education and the excellent and widespread methods to popularize educational ideals in the United States were prominent facts that were widely commented on by the recent Mosely Commission on Education. As is well known, they came to study the educational methods here in vogue, and while they found that some were not by any means ideal, the Commission was unanimous in their approval of the aims, if not always the means, of the educators of the masses of our children.

Much has been done, but there is still a great deal more to do, and that particularly in the line of sanitary education. The "stick out your tongue" and "show your back hair and scalp" routine of the sanitary school inspectors is of immense value, but comparatively few cities in the United States have their school inspectors, whose duty it is to exclude contagious diseases from the schools. They all should have them, and the taxpayer will find it money well invested. Fewer policemen and more teachers skilled in sanitary science is the line of construction.

It is the duty of the members of our profession in the various communities throughout this country to inaugurate methods of physical education for the growing youth and maiden. Health is a better asset than bookish information, and we can show the taxpayer, if we take the trouble, that money spent in the sanitation of our schools and in healthy physical education exercises is a good investment.

THE SURGICAL REPAIR OF BRACHIAL BIRTH PALSIES

The considerable number of children seen every year at the neurological and orthopedic clinics, suffering from the persistent lesions of brachial birth palsy, leads one to think that the optimistic prognosis as to spontaneous cure so commonly given during infancy is either erroneous or the whole number of cases produced must be very large.

Certain it is that many individuals are going through life handicapped by the partial or total disability of one upper extremity as a result of this lesion. The favorable prognosis usually given has probably done more than anything else to restrict treatment to the purely expectant type.

Only within the last half decade has the lesion been considered with reference to surgical treatment. A knowledge of the pathological conditions present in the nerve trunks of these chronic cases must be the foundation for rational surgical treatment.

A study of a series of specimens from five cases, the results of which were presented before the Neurological Society recently, shows that the prime factor is a cicatricial blocking of nerve. The cictarices result from tearing (due to overstretching) of the neurilemma, which, in healing, shrinks and strangulates the nerve fibres; and from organization and contraction of the blood effusion which accompanies the damage to the neurilemma.

The nerves most often involved are the 5th and 6th cervical roots. In the more severe cases the remaining roots of the brachial plexus are also involved. There may be a single cicatrix or several cicatrices present.

With this kind of lesion there can be no hope of spontaneous nerve regeneration, and therefore impaired growth and deformity of the extremity become more marked by contrast as the development of other portions of the body occurs. Naturally, only one kind of treatment can promise anything in the way of results, and this consists in the excision of the damaged nerve tissue followed by end to end suture.

Cases were first treated in this way by Robert Kennedy of Glasgow, and a short time later a series of cases were operated upon in this city, with results sufficiently good to give the operation a definite place in the realm of surgery. The age at which operation is best undertaken is still a matter for discussion, but all things considered, about twelve months is the time of election. If by that time recovery has not occurred it will never be complete without surgical interference. Meanwhile, contractures should be prevented, and the general nutrition of the extremity maintained by massage, electricity and suitable passive motion.

WORD BLINDNESS

In discussing word blindness and its treatment in a recent issue of the Lancet, Charles Wray draws an interesting and practical distinction between true word blindness and what he terms "pseudo word blindness." In the former the patient is unable to recognize words that are in his vocabulary, in the latter he fails to recognize words because they are not in his vocabulary, which in some cases is extremely restricted. Such cases are best treated by placing the child in classes where he will hear a maximum of talking, reading and word building, to the end that his limited vocabulary may be increased, and the defective ear memory which always complicates pseudo blindness may be trained to more effective service. The difficulties which beset a child afflicted with pseudo word blindness may be estimated if we note the difference in the process which occurs when a normal child reads a new word and when the pseudo word blind reads it. For instance, when the normal child sees the word "frog" in print for the first time, and pronounces it as his training in word building enables him to do, he at once associates the appearance of the word with the spoken word which is already familiar, and also with the animal itself. The pseudo word blind child, on the contrary, does not associate the printed word either with a sound familiar or with any object.

Naturally, where the vocabulary is defective, spontaneous speech must suffer, and all the more because phrases, those "memorized permutations of words," which are the common coin of conversation, are also lacking, and the child suffers from restricted phraseology as well as from defective vocabulary. As a consequence, he feels himself at a disadvantage among other children and tends to avoid them and shut himself up in himself, a course which naturally aggravates the very condition which occasions it.

Obviously, it is both useless and cruel to put such a child in a reading class until his vocabulary and phraseology have been trained up to a point approximating the normal. This must be done by "filling his mind with intelligent speech." To this end the co-operation of the child's parents should be enlisted, and the nature of his defect and its proper treatment carefully explained to them. When sufficient improvement has been secured to enable the child to go into the reading class without losing confidence, he should go over beforehand what he is to read, chickening the words which he has to spell out, and then go over these repeatedly again, removed from their context by means of an "isolator," a disc with an oblong opening in it.

By patiently following out these methods, a child may be brought up to normal standards, who, by a little misunderstanding and neglect, could easily have been relegated to the ranks of the distinctly defective.

True word blindness the author believes to be excessively rare, and the keynote to its treatment is repetition, the isolator proving of service also in this variety of the affliction.

LITTLE DAMAGE TO THE ABBOT LABORATORIES

A small fire with explosion of gases occurred April 21st on the top floor of one of the buildings of The Abbott Laboratories. Newspaper reports of the extent and character of this accident were grossly exaggerated. The damage was very small, consisting mainly of broken window panes and cracking of temporary partitions. The plant and machinery were injured but slightly, and the entire force went to work the next morning as usual. The Abbott Laboratories have issued a statement positively denying the newspaper reports that this firm is or has been engaged in the manufacture of ammunition or explosives.

THE MILITARY SURGEON

The Military Surgeon appears in very greatly enlarged form and improved appearance with the April issue. It will hereafter be issued practically as a magazine de lux, and no effort or expense will be spared to bring it to perfection. With the expansion of the military and naval forces and the general interest in greater preparedness for defense, the Military Surgeon proposes hereafter to appear in a form more worthy of the importance of its special field of usefulness and of the dignity of the strong Association which it represents.

PEDIATRICS

ORIGINAL ARTICLES

GLIOMA OF THE RETINA

Report of a Case*

BY J. H. HESTER, M.D.
Louisville, Ky.

Before proceeding with the report of an unfortunate case of glioma of the retina which recently came under my personal observation, a few words in general about glioma may be permissible.

Glioma is the only neoplasm which is known to originate in the retinal tissues. It is essentially a malignant formation which occurs only during infancy and early childhood, never having been observed after the twelfth year. In the majority of instances it is probably congenital, and for some unknown reason it has been more frequently noted in males than in females.

In the presence of a retinal glioma the parents first notice a bright whitish or golden yellow reflex emanating from the pupil of the affected eye; this is sometimes discernible at a considerable distance. For this reason, since the time of Beer the disease has been popularly known as "amaurotic cat's eye." If such an eye be examined by focal illumination, the cause of the reflex is recognized as a light colored nodular mass situated behind the lens and covered with minute vessels. Vision in the affected eye may be either markedly diminished or totally lost during the early stages.

The subsequent course of glioma shows four periods: In the first stage, inflammatory symptoms are absent; the disease manifests itself only in the light colored reflex and blinding of the eye. The second stage is characterized by the development of increased tension; the eye becomes irritated and painful, and the child begins to suffer. In the third stage the tumor grows outward from the eye, first along the optic nerve then in other situations as well, particularly through the cornea or in its vicinity; the eye at length is transformed into a large ulcerating, painful and readily bleeding mass which fills the entire orbit and projects outward between the lids. In the fourth stage the tumor spreads to adjacent and remote organs; through transfer by continuity it passes along the optic nerve to the brain, and by metastasis it extends to the neighboring lymphatic glands and also to various internal organs, most frequently the liver. The child finally dies from exhaustion or from extension of the neoplasm to vital organs, especially the brain. The course of the disease, from its onset to its fatal termination, usually extends over a period of several years.

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*Clinical report before the Louisville Medical Club, of Louisville, Kentucky, April 21st, 1916.

As a rule glioma attacks only one eye, although numerous bilateral cases have also been observed. It is estimated that both eyes are involved in fifteen to twenty per cent of cases. It is found in children only, and mostly before the fifth year of life. It is oftentimes observed at such an early age that its beginning must date from fetal life. This, as well as the fact that several children in the same family are one after another affected with the disease, would argue that the cause in many instances may be sought in a congenital vice of development.

The case I wish to report somewhat in detail is that of a baby boy aged twenty-two months, referred to me by the family physician, Doctor McClure. When first consulted he said the left eye of the child was inflamed, and appeared not unlike an ordinary conjunctivitis; that he gave the mother an eyewash to be used, and requested her to return with the child if the condition of the eye did not improve. He saw nothing more of the patient until three or four months later, when the eye again began to give trouble. Examination at that time disclosed evidence of some lesion involving the interior of the eye, and the parents were advised to bring the baby to see me immediately.

Upon examination I found that the little patient had a glioma of the retina, and I then wished that someone else had the case! The parents were informed that enucleation of the eye was the only thing to do for the child, and even after this had been done the probability was that the neoplasm would recur. They were impressed with the fact that there was a chance of at least prolonging the life of the child by removing the eye, whereas there was no chance for improvement if it were allowed to remain; and they were advised to take this one chance.

One of the saddest things I have ever had to do was to inform the mother that her only child must have its eye removed at once, although from external appearances the eye might show no evidence of existing disease. However, I did this in the present case, but also said I would not perform the operation without having consultation, to which they readily consented. Doctor J. M. Ray and Doctor A. O. Pfingst then saw the patient with me, and concurred not only in my diagnosis but also in my advice as to immediate enucleation. The father and mother were intelligent people, and promptly consented to the operation. I removed the eye the following day. The saddest thing of all is that the neoplasm is returning. I have only had under my personal observation three cases of this kind, and hope I shall never have another.

The only rational treatment of glioma of the retina is immediate enucleation of the eye, if the neoplasm is still confined to the eyeball, being careful to sever the optic nerve as far backward as possible. When the tumor has perforated the eyeball but is still confined to the orbit, a thorough exenteration of the orbit is indicated. When doing the latter, however, we know we are not going to save the patient's life; nevertheless, as it will lessen suffering, the operation should always be advised.

The prognosis is grave unless the disease is recognized early and the eye removed at once as already described. My object in reporting this unfortunate case is to impress upon the minds of the general practitioners present the importance of early recognition and treatment in all cases of glioma of the retina.

DISCUSSION

Dr. J. J. Shafer: Glioma of the retina is an exceedingly rare disease. In seventeen years of experience I have seen only four such cases, and two of these were observed in Fuchs' clinic in Vienna twelve years ago. The disease was accurately described by Hirshberg in 1865.

Retinal glioma occurs only in children, and usually before the age of six years; it is the only malignant neoplasm which originates within the retinal sheath. Three stages of the disease are recognized by leading opthalmologists. In the first stage the tumor is confined to a small area of the retina and there are few observable symptoms. While vison may become markedly impaired, intra-ocular tension remains practically normal for some time. Dilatation of the pupil is usually noted, and the characteristic yellowish pupillary reflex may be observed before the end of the first stage. During the second stage intra-ocular tension markedly increases because of extension of the neoplasm; swelling, congestion, rapid diminution of vision, hypertention and pain are the symptoms noted. In the third stage ulceration and rupture of the globe supervene, the neoplasm rapidly increases in size and usually protrudes between the lids.

It is absolutely essential to ascertain at the time of enucleation just how far inward the neoplasm has extended. If it has followed the optic tract as is usually the case, the optic nerve should be drawn outward as far as possible, and after being divided a microscopic examination be made then and there. If it be found that the neoplasm has extended to the point where the optic nerve is divided, it is imperative that complete exenteration of the orbital cavity be immediately accomplished.

While Dr. Hester did not so state, it is presumed a microscopic examination was made at the time he enucleated the eye. As the tumor has recurred after his operation, the only indication now is to thoroughly remove the entire orbital contents. While this operation will not result in a cure, the little patient may be thereby relieved of much suffering. Of course the prognosis is absolutely unfavorable. Usually these patients die within two years from metastasis to the liver or the brain. The majority of us dislike to see patients with retinal glioma, as they are generally hopeless when first observed.

Dr. J. H Hester (closing): A careful microscopic examination of a section of the optic nerve was made at the time of enucleation in the case reported, and failed to show any evidence of further extension of the malignant process. However, it is now evident that the malignant cells had extended beyond the point where the optic nerve was divided, but it so happened that none were found in the specimen examined. The disease seemed to be confined strictly to the eyeball, but malignant cells had evidently passed beyond the enucleated tissues.

When beginning recurrence of the neoplasm was noted by the parents, but they refused to consider exenteration, which time examination disclosed a distinctly nodular area in the posterior orbital aspect. The little patient was again taken to Doctor J. M. Ray, and we discussed the matter freely with the parents, but they refused to consider extenteration, which explains why nothing further has been done. While, of course, exerteration would undoubdtedly relieve the child of much suffering, a cure could not be expected from the operation. The neoplasm now protrudes nearly an inch and a half from the eye, and the case is hopeless from the standpoint of operative cure.

The treatment of retinal glioma represents a dark chapter in opthalmic surgery, and none of us like to see such cases.

CLASSIFICATION AND TREATMENT OF DIARRHEA IN CHILDHOOD*

BY FRANK H. LAMB, Sc.B., A.M., M.D.
Cincinnati, Ohio

Diarrhea is an increase in the number and looseness of the stools. The increase in the number and fluidity of the stools is due to an increased peristalsis. Increased peristalsis is caused by irritation of canal wall.

1st—By substances within the lumen of the gut.

2nd—By efforts of the body to eliminate poisonous substances through the canal wall.

3rd—By stimulation of the nerve endings in the canal wall.

The etiology of diarrhea is not definitely settled. There have been many bitter controversies between the Finkelstein (or German School) and the American School. In America we have been taught for many years that diarrheas are of infectious origin, especially the diarrhea of the warmer months. The German schools have on the other hand insisted that all the diarrheas can be explained on a chemical basis, except the direct infections of the canal wall. They believe that diarrheas are not only caused by chemical substances within the lumen of the gut but that chemical substances, the incomplete products of oxidation and bacterial action circulating in the blood and lymph, may and do produce diarrhea by their action on the intestinal mucus membrane. I believe that both factors, chemical irritation and infection, play an important part in the causation of diarrhea. That both may be present in the same case and that one may shade into the other as the chief causative factor in the diarrhea present.

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*Read before the annual meeting of the Tenth District Medical Society, at Chillicothe, September 22, 1915.—Ohio Med. Journal.

The diarrheas may be divided into three classes—

A. Nervous. B. Dietetic. C. Infectious.

A. Nervous Diarrhea.—Nervous diarrhea is not as common in infancy as it is in later periods, but occurs throughout the entire period of childhood.

It may be:

1. Emotional. (Fright, fear, anger, stress.)
2. Exposure to cold, chilling of the extremities or abdomen.
3. Dentition.

The stools at first consist of the contents of the bowel, then profuse watery discharges and later mucus with severe tenesmus. There may be thirty to forty small mucus stools daily.

B. Dietetic Diarrhea.—I. Mechanical. Due to eating undigestible or non-digestible articles of food, such as unripe grapes, pears, radishes, corn, cucumbers, etc.

There is usually fever, abdominal pain and tenesmus. The stools are frequent, watery green and contain the undigestible articles eaten.

II. Overfeeding. By overfeeding I mean the giving of more proteid, fat, sugar or starch or more of all these ingredients than the individual child can digest and metabolize.

The constitutional symptoms of overfeeding accompanying the diarrhea may vary from the mildest type of indigestion to the most severe intoxication and death.

The degree of reaction depends upon—

(1) The size of the overdose.

(2) The length of time it has been fed.

(3) The extent of the food injury which has been produced by previous overfeeding.

Into this group I believe fall most of the diarrheas of infancy and childhood.

The mild types of diarrheas, or as we term them indigestions, which are not accompanied by much constitutional reaction, are due to the chemical irritation of the canal wall by the split products of the fats, sugars, starches or proteids, produced by the normal digestive ferments or by bacteria. And they would not be there in excess if they had not been fed in excess.

The severer types of diarrheas, or, as we term them, gastro enteric intoxication or gastro enteritis, are a reaction on the part of the organism as a whole to these products, after they have been absorbed from the intestinal canal.

The two ingredients in the food which most readily and most often produce diarrhea are the sugars and the fats. The reason why these two elements are most often at fault, aside from their chemical action, is the almost universal use of top milk mixtures and artificial foods. In sugar diarrhea the stool is usually green. If artificial foods or starch are in excess the color is usually dark brown. The consistency is soft and if seen immediately after passage may be foamy or yeasty. The odor is sour, the reaction is acid and the stool is excoriating. In taking the reaction of a stool, care must be taken to get one that is not mixed with urine, for the acid reaction of the urine may be mistaken for the reaction of the faeces.

In fat diarrhea the color is usually green or grayish green mixed with white masses of calcium soaps. Sometimes small white sand-like particles are present. The consistency may be watery or mushy, the odor is rancid and offensive, the reaction is acid and the stool is excoriating.

The stools of proteid diarrhea are not of any definite character and are to be distinguished by their foul odor and alkaline reaction.

In the mild types of all forms, mucus is not present in the stool. Mucus occurs in the intoxications and indicates a severe irritation of the intestinal wall.

Blood occurring in the stools of the severe cases of this type does not mean an infection of the canal wall.

III. Underfeeding. Diarrhea occurs in underfeeding in two ways—

1. When an attempt has been made to feed a gruel (oatmeal or other carbohydrate) exclusively, as a permanent food which in itself irritates the intestinal wall.

2. When a weak food has been fed for a long time as a

therapeutic measure in intestinal disturbances and an attempt is made to increase it to the energy requirement of the child.

C. Infectious Diarrhea.—I. Infections of the food before entering the intestinal canal: Ptomaine or Milk Poisoning.—This type of diarrhea is extremely rare because the growth of the lactic acid bacilli and the souring of the milk inhibits the growth of the organisms which split the proteids and fats into poisonous products. Sour milk in itself is not harmful. Milk with lactic acid bacilli and butter milk are now quite popular foods for infant feeding. Pathogenic organisms may enter the intestinal canal in the food but the diarrhea produced by their action upon the food before it enters the intestinal canal, may be disregarded.

(b) Infection of the food after it enters the intestinal canal.—The organisms usually present in the intestinal canal are B. lactis aerogenes, B. coli, B. perfringens, B. bifidus communis, B. acido philis, B. mesentericus vulgatis and a few staphylo cocci and micro cocci.

Some of these organisms act on the sugars and fats forming acids. Others act on the proteids producing the so-called putrefactive products. If the acid forming organisms are in the ascendancy we have a fermentative diarrhea. If the putrefactive organisms are in ascendancy we have a putrefactive diarrhea.

The significant fact here is that we can vary at will the type of diarrhea by changing the food. We can change a puterefactive diarrhea into a fermentative one by feeding a pure carbohydrate diet and we can change a fermentative diarrhea into a putrefactive one by feeding a pure proteid diet. This means but one thing to me. It is not so much the infection of the food after it enters the intestinal canal that produces the type of diarrhea as it is the kind of food we put into the intestinal canal.

II. Infections of the Canal Wall.—Here I would classify the diarrheas that are due to real specific infections and have a definite anatomic pathologic basis.

1. Tubercular ulcer of the bowel, usually associated with tuberculous peritonitis.
2. Strepto coccus.
3. Colon Bacillus. The colon bacillus sometimes takes on pathogenic characteristics.

These produce ulceration of the mucous membrane of the large bowel and the type of disease known as ileocolitis.

The stools are frequent, green, watery and contain much pus and blood.

4. Dysentery.

(a) Shiga. Stools small, frequent, almost pure mucus and blood.

(b) Flexner. Extreme tenesmus and prostration.

III. Infections outside the Canal Wall.—Diarrhea accompanying or occurring with acute otitis, cystitis, pyelitis, pneumonia, empyema, acute miliary-tuberculosis and other infections.

Treatment.—General Principles. Applicable to all forms of diarrhea.

1. Stop all food, no matter what the child is getting.

This applies especially to milk or any of the modifications or forms of milk, breast milk, cow's milk, peptonized milk, whey, albumin milk, buttermilk, malted milk or any other kind of milk preparation. Do not temporize with weaker dilutions or boiled milk, but stop all milk at once. Keep the milk out of the diet from twelve to forty-eight hours and do not feed it then unless the temperature is down and the stools have shown marked improvement. Meat broths are not well borne in the first forty-eight hours. They very often cause vomiting or aggravate the diarrhea.

2. Supply fluids in quantity sufficient to make up for the loss of water and salts in the frequent loose stools. Fluids may be supplied in the form of plain boiled water, weak tea or the thin cereal decoctions. In cases where there is persistent vomiting or refusal to take water, normal salt solution may be given hpyodermically. The Murphy drip may be used but it has not been of much value in my experience. The rectal tube soon becomes very irritating and the fluid is almost all expelled. It sometimes relieves vomiting.

The Initial Purge.—Much has been said against the use of the initial purge. Personally I use it in almost every case. Time and again I have seen it occur, though the physician or mother insisted that there could be nothing in the intestinal canal, because the child had had diarrhea for a day or two and nothing to eat, that a good dose of oil would bring away unbelievable quantities of undigested food, faeces and mucus.

Indiscriminate irrigation of the bowels I believe to be a very bad and sometimes dangerous procedure. The mucus which we so assiduously try to wash out is nature's covering to protect the irritated mucus membrane from the excoriating contents of the lumen of the gut. I have seen cases of collapse after irrigation and death in one instance during an irrigation with normal salt.

Keep the child cool—in the open air if possible, and in as cool a place as can be found. Frequent tepid sponging is grateful and beneficial. In hot weather remove all clothing but the diaper and band.

Diet.—During the first twenty-four hours the diet should consist of plain boiled water, weak tea or dilute cereal water without sugar. Saccharin may be used for sweetening, gr. I to the quart. After twenty-four hours, albumin water and broths may be added to the diet. It has been my experience in getting back to a food that contains sufficient nourishment, that fat is the food ingredient to be most feared and that the sugars are next in order. On the second or third day, when the stools have decreased in number and are of a better consistency, I begin to add from one-half to one ounce of skimmed milk to each feeding and increase it as rapidly as the digestive capacity of the child will permit. If the case has not been a severe one I begin with the addition of whole milk, instead of skimmed milk. Carbohydrates are not added to the diet until the milk mixture is brought up to the strength for the age and weight of the child and are then added very gradually. The accessory articles of diet in older children may now be cautiously added, beginning with the cereal gruels and starches. I have tried out quite thoroughly this summer the use of boiled milk and have not yet made up my mind that it has any greater value (therapeutically) than skimmed milk.

In some of the severer diarrheas due to fat indigestion, when the stools and general symptoms are still bad at the end of forty-eight hours, I sometimes feed dilute solutions of artificial foods (soluble carbohydrates) before beginning the skimmed milk.

Drugs.—The two drugs that are of most value in the treatment of diarrhea are castor oil and opium. Two to four drachms of castor oil in the beginning of the attack will cure most cases if the milk is discontinued. Smaller doses of castor oil will do harm. They are not sufficient to sweep out the contents of the bowel and only add to the irritation already present. If the diarrhea is accompanied with vomiting, a few small doses of calomel may be given to be followed by oil as soon as the vomiting ceases. Next to castor oil, I believe opium to be the most useful drug we possess in the treatment of diarrhea. Caution should be used, however, in its administration. Opium should never be given until the intestinal canal has been cleaned out. Opium should never be given in doses large enough to produce stupor but only in amounts sufficient to check the increased peristalsis. In infants of one month one minim of paregoric, and at two months 2 m. every three hours will be sufficient. At three months 1-4 m. tr. of opium every three or four hours; at six months, 1-2 m. tr. of opium every three or four hours; at twelve months, 1 m. tr. of opium every three or four hours.

Of all the preparations of opium, I like Dover's Powder in the following dosage the best:

During the first three months, 1-8 gr. every four hours; during the second three months, 1-4 gr. every four hours, and at 1 year, 1-2 gr. every four hours.

Bismuth either alone or in conjunction with opium is extremely valuable. In small doses it is of no value. Doses smaller than 5 grs. every four hours during the first six months and 10 gr. every four hours during the second six months will not be very effective.

I personally use one other drug in the routine treatment of diarrhea and that is tannigen. I give from one to two grains with each dose of bismuth and believe it has a distinct beneficial effect.

In collapse, any of the ordinary stimulants may be employed. My favorites are brandy in large doses well diluted, and camphor in oil hypodermatically. If I give a saline hypodermoclysis I put in a few drops of adrenalin hydrochloride. This will constrict the blood vessels of the splanchnic area and drive the blood to the surface. Mustard packs have an important place in the treatment of collapse and are one of the most powerful, if not the most powerful, of all stimulants.

My idea of the treatment of diarrhea is to clean out the bowel, supply the water and salts lost, check peristalsis, support the heart and supply a protective covering for the irritated mucus membrane.

CITRATED WHOLE MILK FEEDING FOR INFANTS*

BY WILFRED VINING, M.D., M.R.C.P., D.P.H.
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The many interesting points raised by Dr. Eric Pritchard in his article on Infant Feeding, in the February number of The Practitioner, following one by myself in the November number of last year, stimulate me to supplement briefly what I then wrote.

My article was a protest against the almost universal use by the poorer classes of this country of diluted milk in the artificial feeding of their young, and a plea for the more extended use of whole citrated milk. I endeavored to point out that diluted milk was being used, owing to a misconception on the part of both the public and the profession, as to the real difficulty that exists when whole milk is given, and I tried to show that whole citrated milk had much to recommend it from physiological, practical, and economical standpoints. It was suggested that all this feeding with diluted food might have something to do with the present appalling rate of infantile mortality and the distressing amount of general ill-health among the children of the poor, and for this reason an appeal was made to the profession to set up a fresh standard of feeding, and to do away once and for all with the dilution method, to which so much support has been given in the past. In doing this, it was not my intention to produce an impression that I was urging a hard and fast method of feeding for every child alike, which never required modification or change, although, in my experience, as in the experience of many others, whole milk feeding as a routine measure is satisfactory, and infrequently requires modification.

Dr. Pritchard agrees with me that whole milk feeding gives good results, but prefers to consider each baby in the light of its "racial, hereditary, familial, and individual" peculiarities, and to give a food which is best adapted for the baby's own particular digestive, absorptive, metabolic, secretory, and excretory processes.

I suggest to Dr. Pritchard that to take up such an attitude in facing the problem of infant nutrition, in connection with the thousands of babies born each year in this country, is neither practical nor possible. The medical men can only hope to keep in personal touch with a minority of these infants, and, at the most, can be a ruling factor in directing others outside the profession in the principles of feeding. An Infant Clinic should be the training ground for nurses and lay workers, and a center for the dissemination of knowledge, the medical man in charge acting as director, and confining himself to cases of special difficulty brought to him by his co-workers. The feeding process is a natural one, and not really difficult, and it would be unreasonable to expect that every artificially fed baby should be under the personal supervision of a medical man. It may be perfection, but it certainly is not practical politics. In the development of these infant Centers, there appears to me to be a real danger of making infant feeding too complicated and too specialized. The problem is slowly becoming surrounded by words and phrases which do little more than fog the mind, and cause mental indigestion. We used to discuss babies in terms of pounds, stools, sleep, temper teeth and bone; now we entangle them in chains of amino-acids, piperazin rings, calories, metabolic habits, and such like. I would protest against considering each child as a complicated mathematical entity. Nature has fortunately allowed considerable elasticity for amounts of dietetic error, which produce no very serious results. There are, however, certain well-defined limitations and fundamental rules, which if we ignore, disaster looms ahead. The persistent feeding a baby with diluted food, lacking in one or more essential elements, is a deliberate overstepping of one of Nature's limitations, and disaster results.

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*London Practitioner.

Dr. Pritchard finds fault with some figures of mine in connection with the relative amounts of protein and lactose in human and cow's milk. I committed myself to the following statement: "Of the total solids, the carbohydrate lactose is about 10 per cent. less in cow's milk, while the protein made up of caseinogen and lactalbumen, is something less than 10 per cent more plentiful." My authority for this statement was Notter and Firth's Text Book of Hygiene. In that work, a table is given, which tells us that in every 100 parts of human milk there are 12.6 parts of total solids, of which 2.29 are protein parts and 6.2 carbohydrate parts. In the case of cow's milk, the figures are: total solids 12.8; protein 3.55; and carbohydrate 4.88. Now, considering their relationship in terms of total solids, we see that in every 100 parts of human milk the total solids contain 18.1 parts protein and 49.2 parts lactose, and in every 100 parts of cow's milk the total solids contain 27.7 parts protein and 38 parts lactose. In other words, the total solids of cow's milk contain about 10 per cent more protein and 10 per cent less lactose. If the percentage is considered in terms of protein and lactose, the percentages will be higher, although still some distance from Dr. Pritchard's 25 per cent and 150 per cent.

My remarks about the dried milks were made when discussing their use from an economic standpoint, and it was pointed out that they were more expensive than cow's milk if the full fat varieties were employed. Bacteriologically, they do not worry me at all; mention was merely made that they were not germ free, and from the point of view of purity, their use did not appear to offer any considerable advantage. Personally, I dislike feeding babies with tinned and, frequently, stale food, and for routine use I hope the profession will never support them in preference to fresh cow's milk. With most of Dr. Pritchard's article I agree. Dr. Pritchard is an authority upon the subject, and no criticism of mine can undermine the principles upon which his work is founded. One only wishes to suggest that if any real impression is going to be made upon the present amount of infant ill-health, the problem will have to be faced with a wider outlook, and a striving after, not mathematical metabolic perfection, but a reasonable amount of real improvement in the infant physique of this country.

SOME COMMON ERRORS IN INFANT FEEDING*

BY GOLDIE E. ZIMMERMAN, M.D.
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Clinical results, the world over, have proven that the best food for the infant up to the normal time of weaning, is breast milk. Unfortunately, every infant does not have this fair beginning, which is so necessary for health, and artificial foods are resorted to. It must be allowed that we encounter more disturbances in the artificially fed babies than in the greast fed.

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*Read at the 34th annual meeting of the South Dakota State Medical Association at Sioux Falls, May 18-20, 1915.—Journal-Lancet.

Let us take up, briefly, the nature of these various disturbances:

First. The effect of too little food, or underfeeding. Although this is not very common, we do occasionally meet with such cases. Hare-lip or cleft-palate may make it impossible for the infant to get sufficient food. Inverted nipples may also be a cause. Some mothers have heavy, well-filled breasts, and the slightest pressure causes a stream of milk to flow from the nipple; others have spincter muscles which seem to close tightly when stimulated, and the milk flows drop by drop. The child has to work much harder when nursing such a breast, soon becomes exhausted, and falls asleep, even though unsatisfied. In such cases the child does not gain in weight, but remains stationary or loses. As a rule these infants are not restless, sleep is deep and unbroken, and they do not cry much, but their cry is rather a whine. The stools are few and scanty, often only a stain on the napkin; and the urine is noticeably scant. The temperature is usually subnormal, except in the early days of life, when there occurs a marked rise in temperature, often to 105 degrees. This is known as inanition fever. It usually disappears in a few hours after the infant has been given food. Czerny[1] believes it due to bacterial infection from the intestines, and that it is overcome by the change in intestinal content.

Secondly. The effect of too much food, or over-feeding. Most writers consider this condition more common and far more disastrous[2] than under-feeding. The causes of overfeeding are either nursing too often or receiving too much at a nursing. It leads to a nutritional disturbance called dyspepsia. In a large number of breast-fed babies, it results in the removal of the child from the breast, a step which should never be taken unless absolutely necessary, and which can often be avoided with a little care and patience. The most common symptom is "colic." Sometimes it occurs a few minutes, sometimes hours, after nursing. When coming on hours after nursing, the intestinal tract seems to be involved mostly; when after frequent nursing, there seems to be both stomach and intestinal irritation. Diarrhea is nearly always present. There are from six to eight stools a day, green in color and containing mucus and curds. Vomiting is also frequent, often just a spitting up of small amounts of vomitus. The temperature tends to be above normal. The tissue turgor is only reduced in the later stages. The skin is usually fresh in the early stages, but later becomes pale. Nervous disorders may appear. The weight curve shows decided changes. A marked gain in weight followed by a stationary period or a loss, is very characteristic of this condition.

Continued over-feeding with dyspepsia often results in facial eczema, and eczema of the scalp. It also lowers the child's resistance. If the child is properly treated upon first appearance of these symptoms, recovery is immediate; if the symptoms have existed for some time, their disappearance will take longer. Careful regulations of the diet are necessary, and even then colic may persist long after all other symptoms have disappeared. Since this condition is caused by too much food, the first step in our treatment is to reduce the food. This can be done by the four-hour intervals between nursings. It is very unusual to see dyspepsia in a child that has been started out on four-hour feedings. In severe cases it is advisable to give only sweetened water or barley water at first for twenty-four hours. Fresh air is a necessity. In the artificially-fed infant, if the food in any case has been pushed beyond a certain point, there is a lowering of the tolerance for all foods, and especially that particular food, which point must be determined in every case. In the normal child it is about 100 calories per kilo weight in twenty-four hours. The degree of tolerance regained by reduction of the food quantity depends on the severity of the case and the length of time the disturbance has existed. Third. The effect of too much fat. Fat plays an important role in the case of nutritional disorders. The chief disturbance caused by fat is that condition called by Czerny "Milchnahischaden," by Finkelstein "Bilanzstorung," and by some Americans "weight-disturbance." The fat of the food is the element responsible. This does not mean that the amount of fat in the food is necessarily large, but that the amount of fat is above the tolerance of the infant for milk-fat. Artificially-fed infants are almost exclusively affected. They are pale and fretful, and while perhaps fat, are pasty. Their appetite is poor and their sleep is disturbed. They gain weight slowly, and what is gained one day is lost the next; hence Finkelstein's term "Bilanzstorung," the most striking thing, however, is the character of the stools. They are constipated, hard, dry, and of a foul odor. They are white or grey in color, and are known as "Seifenstuhle," certain chemical changes have taken place in these "Seifenstuhle." The fat is absorbed to a considerable extent. It has been shown that the carbohydrates are decreased to less than half of what is ordinarily found in the stools. Calcium and magnesium are excreted in large quantities. Fat and calcium must be present in the food in considerable concentration in order that constipation and soap stools can result. The dryness is due to absorption of water by the large intestine and rectum and to insoluble soaps. The reaction is alkaline. The urine has a peculiar odor, as the mother says, "strong," the ammonia content is high, the indican reaction distinct. The urine is highly irritating.

This condition, "Milchnahischaden," responds quite readily to treatment. Increasing the fat makes the condition worse, while diminishing the fat improves it. A diminution in milk, with the addition of cereal and sugar, is very good correction. In severe cases it is desirable to remove all fat, as far as possible, from the food (skimmed milk). Then, as soon as possible, a trial of the fat-tolerance should be made by substituting one or two ounces of whole milk for the same quantity of skimmed milk If this can be taken care of properly the fat is gradually increased every other day, and so on. If the stools begin to show chalky masses in them, the fat should again be reduced. In milder cases the reduction in amount of whole milk and the addition of carbohydrates are all that is necessary. By reducing the milk we also reduce the calories, but these are made up by the carbohydrate added. Malt sugar seems to be the most desirable of the carbohydrates in these cases. If simple milk reductions, with addition of carbohydrates, do not suffice, it is advisable to give malt soup (Keller). It seems to work magic, almost, in these cases; for after a few days there is increase in weight; there are several bowel movements a day, where before there was obstinate constipation, and the stools are of good consistency. After five or six weeks of malt soup we had best give a mixture of half milk and half barley water plus one, two, or three teaspoonfuls malt extract. Children under three months should receive a so-called thin malt soup. In some severe cases of "Milchnahischaden" the infant's tolerance toward milk-fat is so decreased that they do not gain upon malt soup, and we must then resort to a fat-free food, namely, buttermilk.

Fourth. We have to consider the protein constituent and its effect in the food for the infant. Protein is the chief nutritional content in an infant's food. It replaces that which has been used in the performance of the ordinary functions of the body, and lost as secretions, a small part is burned to furnish energy, and a distinct amount is retained for growth. The effort all along has been to explain why children thrive on breast milk and oftimes do so poorly on cow's milk until it has been modified several times, or another food resorted to. By chemical analysis[3] it was shown that the most striking difference in the composition of the two was that the protein was present in three times greater quantity in cow's milk than in human milk. It therefore seemed logical to suspect the casein as the substance most difficult of digestion. Then, when Bierdert determined what he considered undigested casein in the stools, it was assumed that the excess of protein in cow's milk was the explanation of its failure as a food for infants. These and similar theories were supported for many years, and even up to twelve years ago. It was then shown that Bierdert's observations were false. The undigested casein curds were found to be unsoluble soaps of the fatty acids, and they are also found with breast-feeding (Talbot). Protein curds which occur in the stools with raw milk disappear upon boiling the milk (rennet precipitates the casein into fine flakes).

Thus far we cannot prove that the protein of cow's milk, in quantities two or three times that of breast milk, has any injurious effect upon the infant. There is a possibility that a great excess of protein under certain circumstances may be harmful. Holt and Levine[4] have found that large amounts of casein by mouth can cause a rise in temperature. When the food was stopped, the temperature subsided. It must still be allowed that protein has very little to do in causing nutritional disorders.

Fifth. The effect of too much sugar and starches. Too much sugar in the food and over-feeding are some of the grave errors often brought on by generous parents. Nutritional disturbances, characterized by diarrhea, vomiting, and slight temperature, follow. Breast-fed, as well as bottle-fed, infants are affected. Infants under three months are most likely to be affected because their food tolerance is narrowly limited. There is some difference of opinion as to which of the sugars is the least harmful and why. All carbohydrates used in nutrition have the same nutritive function and about the same caloric value, but they differ in physical properties (starch and glycogen being soluble), in the amount of digestive effort they call forth, in fermentability, and rate of assimilation. Care should be taken in selecting the sugar most desirable for the case. For example, cane sugar is not directly fermentable, but is apt to cause fermentation. Maltose is exceedingly fermentable, yet it is used especially in intestinal fermentation. No matter what form of carbohydrate is taken, if it can be digested it is ultimately changed into dextrose before utilization and carried to the liver, where it is converted into insoluble glycogen and stored for future use. If absorption is too rapid, the liver cannot convert it into glycerine as fast as it is presented, and the excess passes into the urine—alimentary glycosuria. The final product to be produced from carbohydrates taken as food is glycogen. Only fermentable sugars form glycogen, dextrose, maltose, cane sugar, and milk sugar, in order. A certain amount of energy is expended in digesting and assimilating carbohydrates; and their relative food value depends on the amount of energy that must be expended in converting them into dextrose.

The reason that maltose and cane sugar have greater availability than milk sugar, is that the maltose is completely converted into dextrose by the chemical addition of water, and is at once available. Cane sugar when split up is converted, half into dextrose and half into levulose, which the enzymes of the blood can convert into half dextrose and galactose, which must undergo further change. The net energy value of maltose is greater than that of cane sugar, and that of cane sugar is greated than that of milk sugar.

Mixed carbohydrates, as Keller's malt soup and other mixtures containing flour, are considered valuable in many cases. While the child cannot gain without enough sugar, too much sugar may be the cause of intestinal disturbances.

As we stated before, the best food for the healthy infant is mother's milk. But even so, we often find conditions which need attention with the breast-fed babe, such as too frequent feedings, small quantities at too frequent intervals, or too large quantities at too frequent intervals, and also irregular feeding. Lowenburg[5] considers over-feeding and irregular feeding responsible for the greater number of cases of functional vomiting in infants under one year. We also find infantile diarrhea following irregular or over-feeding.

Having reviewed these common errors in infant feeding, let us also consider rational feeding or how we may avoid the above errors. We agree that breast milk is the best food, and should be given whenever possible to the new-born child. We should encourage every mother to nurse her child. Many mothers wean their babies for trivial reasons, which can ofttimes be traced to the physician in charge. One of the excuses is that the infant doesn't get enough milk; in other words, the mother's milk gave out. If the supply of milk is scant the child should not be removed from the breast; but two or three feedings of modified cow's milk per day should be given, together with the breast milk. Mortality statistics show the value of breast feeding. The breast-fed child shows a far greater immunity to infection. Some believe there is a passage of immune bodies from mother to infant in the mother's milk. Czerny[6] believes the cause lies in the high fat content of the breast milk. Langstein[7] says that the difference in different breast milks has not been proven, and holds that all breast milk is adapted to the child; also that after the ninth month the breast milk contains too little iron, and he advises the giving of small amounts of vegetables and milk dilutions.

A great deal has been written and much emphasis laid on the feeding intervals. It need be repeated every chance we get, and we cannot emphasize too much the value of the longer interval between feedings. This holds in both breast and artificially fed infants. The four-hour interval brings excellent results in most cases. In special cases, shorter intervals may be advisable, but not as a rule. The advantages of longer intervals are absence of indigestion, good appetite, regular sleep, and gain in weight. It also gives the mother more time to herself, which is of some value.

The amount of breast milk taken at a feeding can be determined by weighing the infant before and after the nursing. Usually the infant nurses until the appetite is satisfied; and the appetite and quantity of milk are so nicely regulated in most cases that the demands of one are supplied by the other. With the bottle-fed infant it is not so; but there is real danger of over- or under-feeding. What may be thought to be crying from hunger is often discomfort from too much food .

Rosenstern has made a study of this, and has found that 100 calories per kilo of body weight is sufficient for normal gain on diets poor in fat and rich in sugar; while those with low sugar and high fat require more calories. Rosenstern and Langstein consider the water content of cow's milk of the greatest importance, the carbohydrates and salts next. Without carbohydrates a gain in weight is impossible. Protein is necessary in smaller percentage, as is shown in the low content in breast milk.

The simple milk dilutions with water or barley water with the addition of carbohydrates are in general use in Germany, and are becoming more widely used in our country. From the sixth to the ninth month fruit juices, cooked cereals, vegetable purees, and toast should be gradually added to the diet. If not in the hot summer months, the child should be weaned at the ninth month, substituting one bottle feeding at first and gradually two or three, so that in a short time the child is entirely weaned from the breast. This does not apply to the premature infant.

After the first year, as the child eats more cooked cereals, vegetables, fruits, and meat juices, less milk is needed. Usually one and a half pints of milk is sufficient in twenty-four hours. Meat is not digested. The muscle fibres pass through the bowels unchanged, and should not be given until after the third year. In some infants egg albumin is absorbed in the blood unchanged, and produces marked disturbances. Eggs should not be given until the fourth year.

Each child is in itself a separate study, and we cannot apply all rules to every child. We must study each case first, and then apply according to our judgment and knowledge.

In conclusion, I wish to emphasize that all children should be breast-fed whenever possible; that regular feeding at four-hour intervals avoids many disturbances; that too much fat in the food is a common cause of nutritional disturbance and that too much food is the most common cause.

The sooner we can agree on these few facts, the sooner will the public be convinced that these are fundamental and will become educated to them. This will, undoubtedly, be of benefit to both the profession and the public.

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SOCIETY TRANSACTIONS

NEW YORK ACADEMY OF MEDICINE

Section on Pediatrics*

Stated Meeting, Held February 10, 1915

Dr. Royal Storrs Haynes, in the Chair

A Case of Complete Cretinism with Normal Mentality.—Dr. Ward B. Hoag presented this patient, a girl 5½ years of age, who had first come under his observation when she was 3½ months old. At that time she had all the typical characteristics of cretinism. Her extremities were the shortest he had ever seen. Her head was covered with a thick mass of coarse, flaxen hair, her nose showed no development, her tongue protruded, her skin was dry, and her flesh showed no resiliency. She showed no animation, even hunger apparently forming no part of her desires. At the present time she stood 40 inches in her shoes and she weighed 43 pounds five weeks ago, which was more than the normal weight and height of the average child of her age. There was apparently nothing abnormal in the condition of the child at the present time; she played and talked just as any other child. The absence of the thyroid could not be attributed to trauma, since there was nothing abnormal at the time of birth except that the labor was rather precipitate. Dr. Hoag said thyroid medication was begun at the time he first saw the child, 1-4 grain of thyroid extract having been given twice daily. This amount was gradually increased until for a time, when she was about four years of age, she took 5 grains daily. Under this amount she developed the typical signs of excess of thyroid. For some months she had been getting 3 grains daily. Very soon after beginning the thyroid treatment her hair came out in great masses and her skin came off in sheets, two or three inches coming off in one piece, and the child was practically made over in a few weeks. Dr. Hoag thought she was worth while presenting as demonstrating the result of thyroid medication together with persistent and careful attention on the part of the mother. The case showed that if one took a case 100 per cent cretin early and administered the amount of thyroid that nature intended the child to have, one could get a perfectly normal child, provided the child had no other defect in any other ductless gland secretion.

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*Medical Record.

A Case of Death Following Ingestion of One Dram of Camphorated Oil.—Dr. Sidney V. Haas reported this case. He stated that the almost universal use of camphorated oil as a household remedy made a knowledge of the danger attending its internal administration important. Camphorated oil was a preparation containing 80 per cent cotton-seed oil and 20 per cent camphor. The literature abounded with reports of deaths due to ingestion of this preparation. These reports showed that the amounts that had resulted fatally varied. Death had resulted from taking 7½ grains of camphor; on the other hand, an instance had been reported in which a child had taken a teaspoonful of the oil upon a full stomach and was then given a teaspoonful of castor oil and all went well. The case he wished to report occurred in a baby three weeks old. The baby was brought to the hospital three-quarters of an hour after having been given a teaspoonful of camphorated oil by mistake. (The baby had a slight bronchitis and the physician had prescribed castor oil internally and camphorated oil externally.) The child was cyanotic and appeared to be very ill. The stomach was washed out and the child was placed in a ward and at this time did not appear very ill. The maximum temperature was 100.6 degrees Fahr. The child only showed signs of bronchitis which had been diagnosed before the camphorated oil was administered. After about forty-three hours the child died very suddenly in a cyanotic attack. This was in accord with observations previously made that death from this cause usually occurred within forty-eight hours. The urine in this instance showed a slight trace of albumin. As an explanation of the toxicity of camphor in young infants and weakened infants, it might be mentioned that C. Happich, in experimenting on rabbits and guinea pigs, found that the degree of tolerance for camphor depended upon the presence of glycuronic acid which was produced in the pulmonary circulation, by the combination of sugar and oxygen. In states of inanition this substance was much reduced and the individual became more susceptible to the toxic action of the drug.

Differential Diagnosis of Thoracic Conditions by Roentgenogram.—Dr. Leon T. LeWald gave a lantern-slide demonstration in which he first showed what was revealed by the reontgenogram in pneumonia, and called attention to the possibility of confusing these with old tuberculous bronchial lymph nodes. He then showed a picture which was suggestive of miliary tuberculosis, but was probably a tumor, possibly a sarcoma, of slow growth, and said that such a picture was instructive in emphasizing the importance of taking into consideration the clinical history of the case and the possibility of making a mistaken diagnosis from the radiograph alone. Dr. LeWald next showed pictures of anomalous ribs, cervical ribs, and transposition of viscera, and stated that he had seen fifteen instances of transposition of viscera. Other slides showed foreign bodies located by means of the roentgenogram. In one instance the foreign body had been lodged in the bronchus for seven years, and the patient had been operated on for empyema; in another case, a child was operated on for an encysted empyema, and the condition was found to be due to an upholster's tack which had been swollowed two years previously. If one had to deal with a condition of this kind which would not heal it was always advisable to subject the patient to a roentgenological examination. In making radiographs in looking for foreign bodies it was a help to take plates in the lateral or oblique positions. Dr. LeWald also called attention to the possibility of mistaking a beginning pneumonia for an acute appendicitis and related an additional case together with the case described before the Joint Meeting of the New England Pediatric Society, the Pediatric Section of the New York Academy of Medicine, and the Philadelphia Pediatric Society (Medical Record, January 22, 1916). Both of these cases were under the care of Dr. J. Finlay Bell of Englewood, N. J., and to him belonged the credit for the suggestion of making the differential diagnosis by means of the Roentgen ray.

The Diagnosis of Congenital Pyloric Stenosis of Infancy by Roentgenogram.—Dr. LeWald read this paper and illustrated it with lantern slides. He said that Dr. Downes had operated upon seventy-seven cases of pyloric stenosis in infants. Forty-seven cases belonged to a recent series in which he had performed the Ramstedt operation. Thirty cases were in the earlier series in which a gastroenterostomy was performed. The age of the children ranged from fifteen days to four months. In Dr. Downes' series there were four males to one female. As to the choice of operation, it had been the experience of both Dr. Downes and himself that the Ramstedt operation of simply splitting the hypertrophied muscle allowed the stomach to empty itself in a more physiological manner, while the performance of a gastroenterostomy was likely to produce too rapid emptying of the stomach and intestinal disturbance. According to Dr. Downes' statement, this had been observed in 50 per cent of the cases in which the latter procedure was employed. After speaking of the attempts to classify the different degrees of pyloric obstruction and of the ingenious theories that had been advanced to account for its origin, Dr. LeWald said that a study of the literature on this subject forced one to the conclusion that, after all, little had been gained, and that these theories did not assist very materially in an elaboration of diagnosis nor to establish a definite form of treatment, which was the important and practical end that was sought. Certain cases which exhibited the classical symptoms, namely, prijectile vimiting, steady wasting, constipation, excessive stomach peristalsis, in addition to a palpable nodular tumor in the pyloric region, must be regarded as cases of true pyloric stenosis. On the other hand, cases were reported without any palpable tumor, but otherwise having all the usual symptoms in varying degrees of severity. It was perhaps in these that the greatest difficulty arose as to the best method of procedure and in how far they might be surgical. The suggestion was given by the majority of workers that this group should be treated medically until they no longer respond to medical management, as evidenced by stationary or falling weight. They might then be subjected to laparotomy with its high degree of hazard, the operator being necessarily uncertain as to his method of procedure until he had satisfactorily explored the stomach. If a hitherto undiscovered tumor was found at operation, the infant must be able to stand a considerable degree of shock incident to the performance of a posterior gastrojejunostomy. If no tumor is found, little was gained and much lost by subjecting the impoverished infant to the loss of blood and further depletion of its natural resistance. If, therefore, by the use of modern methods diagnostic means could be made so complete that we could with a degree of positiveness determine whether or not a given case should be operated on, we should be making an advance worth while. Modern apparatus with the intensifying sheets enabled the radiologist to make instantaneous exposures, thus securing with the minimum effort negatives of great value. Whether the stomach in early infancy was simply a dilated pouch for the accumulation of food which was quickly acted upon by the gastric juice and immediately allowed to pass out through the pylorus, or whether it performed its share of the preparation of food for the more complex processes of digestion in the duodenum, was a question for future study. The fact was that they might observe the exit of food into the duodenum within a minute or two after its intake, and this tended to show that the stomach played a part which had been overvalued. That liquid foods began to be expelled normally in a very short time after they were taken into the stomach was very helpful in making a diagnosis of the conditions under consideration, for if it could be demonstrated with a degree of exactness, by a series of radiographs, that the milk was retained for a greater length of time than in the normal stomach, as was shown by the bismuth shadows, the type of obstruction with which one was dealing could be determined with a fair degree of certainty. Since these striking results could be obtained it seemed manifestly unfair not to early obtain a series of radiographic pictures in every case suspected to be one of pyloric stenosis, so that an infant suffering from a true tumor and lumen so small as to practically occlude the passage of food into the duodenum might be early given into the hands of the surgeon while its physical condition was still good. Again cases of pyloric spasm, even of marked degree, but without tumor formation, could be differentiated, since the amount of food passing through the pylorus and the time required for its passage could be seen and thus the diagnosis and even the prognosis could be fairly well fixed. The prophecy might be made that in the future every suspected case of pyloric obstruction would be subjected to radiographic study before determining on a plan of treatment, just as today no surgeon thought of putting up a fracture without the use of the x-ray.

Recurrent Hilus Infiltration: An Unusual Form of Tuberculosis in Children.—Drs. Murray H. Bass and Henry Wessler presented this paper which was read by Dr. Bass. He stated that our knowledge of the pathogenesis and anatomical varieties of tuberculosis in childhood had undergone considerable change during the past decade and at present it is recognized that the clinical types of pulmonary tuberculosis in the first few years of life were quite distinct from those of adults. There were, however, forms of tuberculosis whose localization in the lungs of children was just as typical as that in adults, the area of lung involved being determined by the presence of the diseased bronchial nodes. After reviewing the generally accepted conception of the origin and distribution of tuberculosis in the infant and child, based on the work of Hamburger, Gohn, and Albrect, Dr. Bass said that recurrent hilus infiltration was an extension of the tuberculous process from the lymph nodes and occurred often enough to be recognized as a clinical entity in the great group of tuberculous infections of the lung. Sluka had encountered it thirty-eight times within a few years and Eisler had also reported an identical clinical picture. For a knowledge of the morphology of this lesion they were indebted to the Roentgen ray. It occurred in the vast majority of instances on the right side and its point of predeliction was in the lung in the immediate vicinity of the fissure between the upper and middle lobe. Beginning with its base at the hilus, where a dark shadow of tuberculous nodes was visible, a fairly opaque shadow of homogenous density extended outward into the lung for a considerable distance, gradually fading into the normal lung tissue. The resulting infiltration was triangular in shape, its apex being near the axilla. Its lower margin was sharply defined by the interlobar fissure; the latter was thickened and the seat of a pleurisy, as it could usually be seen extending quite into the axilla beyond the limit of the infiltrated area. Sluka believed that it was a direct infection of the pulmonary tissue from the caseated lymph nodes at the hilus with a resulting infiltration of the lung. Sluka never found it before the age of two years in his series and their experience had been similar in the Roentgen examination of children. Perhaps the most remarkable fact in regard to these cases was that the infiltration did not remain constant in size or appearance. The Roentgen examinations made at intervals of one month might show at first a wide area of infiltration and at later examinations nothing might be left but the thickened interlobar fissure. The latter usually persisted for a long time as a thin sharp line running horizontally across the upper part of the right lung from the inner end of the fourth costosternal junction to the axilla. Such a sequence of infiltration and normal lung might be repeated several times and justified the appellation "recurring hilus infiltration," and its correspondence was found in the signs and symptoms of the patient. Children in whim this typical hilus involvement was found were usually brought to the physican on account of general debility, loss of weight, slight cough, or night sweats. The condition was found in children between the ages of two and eight years, but did not occur in infancy. Physical examination of the chest was usually negative unless the process had involved a considerable mass of lung tissue. This point was of the greatest importance since it tmphasized the fact that in such debilitated children with positive von Pirquet test, x-ray examination was imperative. This was the more necessary since it had been shown that this lesion was in many cases a curable one, provided appropriate treatment was followed. The writers then reported two illustrative cases from a number coming under their observation and showed lantern slides of radiographs taken at different times during the progress of these cases. In closing they stated that the exact pathogenesis of these lesions was rather obscure, for corroberation by autopsy was impossible, since the majority of the children recovered and those that went on to a fatal termination presented a picture of a general caseous involvement of the lung. The histories of many of the cases showed that before the onset of the condition the child had had either measles or pertussis, and the theory had been advanced that possibly there had been at this time not only a lowering of resistance to tuberculosis but also that local conditions in the bronchial lymph glands might be at fault. It was difficult to conceive of a true tuberculous infection coming and going in this fasion and the most plausable theory to account for it was that the underlying pathological process was one of an inflammatory exudate about the tuberculous hilus.

Some Factors Affecting the Incidence and Case Mortality Rate of Measles.—Dr. J. G. Wilson, Assistant Surgeon of the United States Public Health Service, read this paper, in which he stated that a study of the vital statistics of the various cities and states showed that at the present time the general mortality from measles was not nearly so high as it was when Holt placed the general mortality of measles at 4 to 6 per cent and that of institutions at 10 to 35 per cent. In 1903, in New

York City the fatality rate per 1,000 cases was 2.15 per cent and even this was higher than that of any other city with a population of 500,000 or over. It would seem that we were well within the limits of conseration if we placed the present case mortality of measles throughout the United States at less than 2 per cent. The assistant statistician of the Prudential Life Insurance Company, Frederick S. Crumb, said that the most reliable international mortality statistics showed that on the average, in the countries in the temperate zone, more than 1 per cent of all deaths were caused by measles. In the registration area of the United States the percentage which measles contributed to the total mortality during 1906 o 1910 wah 0.71. The mortality was almost uniformly higher in institutions than in private practice. Dr. Wilson said he had had the opportunity of observing measles at the Immigration Station at Ellis Island, and that, notwithstanding the unfavorable conditions offered by the steerage and the fact that patients were almost invariably exposed to cross infection during transportation from New York docks to the Immigration Station at Ellis Island, the case mortality of measles at the Contagious Hospital at Ellis Island had averaged less than 10 per cent from the time the hospital was opened in 1911 until the outbreak of the European war. Since that time measles had practically ceased until recently when the steerage from Rotterdam was again bringing the disease. In spite of the unfavorable conditions, the mortality at present was the lowest they had ever had, 8.5 per cent. The esayist exhibited charts showing the regularity of the recurrence of epidemics of measles in this country and in fifteen American cities. With few exceptions the disease showed biennial periodicity. Various explanations had been advanced to account for this regular periodical recurrence. Muller and Crum believed that a measles outbreak in a community either actually attacked or immunized the whole susceptible population and that the off years following an epidemic simply represented the time required for a new susceptible generation to come into being. If this theory were correct, it would seem that in a continuously susceptible population, the yearly morbidity from measles would remain practically canstant. It seemed probable that the immigrant population passing through Ellis Island was continuously susceptible to measles since it represented large handfuls of children of all ages picked more or less at random from widely separated communities of Europe. Notwithstanding this constancy of susceptible persons passing through Ellis Island the morbidity from measles had varied from 0.56 to 1.67 per 1,000 immigrants for the last 15 years. A study of all the available data simply established the fact that measles epidemics showed a period icity of recurrence and that this periodicity seemed to vary in different places. It was quite evident that the disease had no fixed mortality rate. There was probably as yet some undetermined factor entirely apart from age and unfavorable surroundings which entered into the situation and made the disease now a mild one with easy recovery and again a virulent one with a high incidence of complications and death. There was only one factor, overcrowding, which seemed to bear a causal relation to the incidence and fatality of measles and even this was incapable of explanation in its entirety. This factor had influenced the situation at Ellis Island and the same problem had been worked out by the health authorities in Glasgow where both the incidence and the fatality of the disease were shown to bear a direct relation to the number of rooms occupied by the family. Basing his statements on the results of his observation and examination of the histories of 2,000 measles cases in the Contagious Hospital at Ellis Island, Dr. Wilson considered the three most important complicating conditions which influenced the course and termination of the individual case. These conditions were suppurative otitis media, bronchopneumonia, and cross infection. At Ellis Island it appeared that measles was four times as frequent as all other contagious diseases combined. Owing to the fact that many of their admissions had been exposed to more than one disease on board ship and in the transfer barges there were a certain number of cross infections, about 4.7 per cent of the measles cases being complicated by some other contagious disease. This fact added materially to the measles mortality. In this series the mortality was 9.5 per cent. The mortality among the 36 cases contracting diphtheria was 66.6 per cent; of those contracting scarlet fever 46.4 per cent. From a further study of this series of cases the writer concluded as follows: (1) Cross infection, especially that of diphtheria, was the most serious event that could occur in the course of measles. (2) Suppurative otitis media, although the most frequent complication of measles, was not of grave prognostic import when properly treated. (3) Bronchopneumonia complicated about 10 per cent of all measles cases, being little influenced by weather conditions in the frequency of its occurrence or its fatality. (4) The fatality of measles complicated by bronchopneumonia was 58 per cent, but this fatality varied in an exceedingly erratic manner and without marked relation to the total case fatality of measles. (5) The incidence rate of bronchopneumonia as a complication rather than its case mortality appeared to be an index to the severity of any particular outbreak of measles.

Chloroma: A Report of Two Cases, Together with the Roentgenological Findings.—Drs. Everett W. Gould and Leon T. LeWald made this presentation. They stated that only a comparatively few cases of this condition had been reported and they therefore thought it advisable to place on record the following two cases which had appeared in the Pediatric Service of St.Luke's Hospital. An analysis of the cases reported seemed to show that chloroma occurred more frequently in children than in adults and more frequently in males than in females. The chief clinical features which characterized the disease were exophthalmos, which was produced by a retrobulbar lymphoma; swelling of the temporal and occipital regions, due to the involvement of the cranial bones; enlargement of the spleen and lymphatic glands throughout the body, but especially in the cervical region, and a severe and progressive anemia causing weakness, fever, and emaciation. Hyperplasia of the bones of the skull undoubtedly began in the marrow of the cranial bones but soon involved the periosteum and the dura mater, forced the sutures apart, filled up various foramina of the skull, and by pressure upon the nerves which emerged from the brain through these openings might cause blindness, deafness, pain, or other symptoms referable to the nerves involved. While exophthalmos was the first symptom noted in a majority of the cases reported, in some cases there had been no exophthalmos. In the various reports nearly all the bones of the body had been cited as the seat of this change. The blood picture in chloroma varied greatly in the cases reported. The anemia was believed to be due to the rapid proliferation in the bone marrow of the leucoblastic tissues, resulting in the crowding out of the elements from which the red blood cells were derived. The anemia therefore depended upon the deficient production of red cells rather than upon any toxic destruction of them. The hyperplasia of the leucoblastic elements led to the frequent appearance in the blood stream of large numbers of white blood cells of various types and had led to the classification of this condition as a form of leucemia. In most of the reported cases this characteristic leucemic picture had been found at some time in the course of the disease, especially during the later stages. The predominating type might be any one of the normal or leucemic types of the leucocytes, or the hyperplasia of the parent cells might reach such a stage that the new forms did not reach the blood stream in such numbers as to give the picture of a leucemia. During the time that the cases herein reported were under observation the blood picture was never that of leucemia, but in these cases this time represented but a small part of the duration of the disease. The name "chloroma" was given to the disease because of the peculiar green color frequently seen in the tumors removed from the body, and which might also be found in any of the new growths, or even in a blood clot within the heart, though it was a more common characteristic of the hyperplasias of the bone marrow. Recent observations in regard to the histological characteristics of this disease showed that it did not belong to the lymphomata, carcinomata, or lymphosarcomata. Klein and Steinhaus perhaps first observed that the tumors of chloroma were largely composed of cells of leucoblastic origin. They found that neutrophile cells, especially myelocytes, constituted a large part of the tumor mass. Large and small lymphocytes with eosinophile granules were frequently predominant, and they therefore classified the disease with the leucemias. Warthin showed that in his cases at least the tumors which involved the vertebrae and the prevertebral tissues were primary in the bone marrow spaces, that they infiltrated or grew through the lymphatics and blood vessels or broke through the bone, and secondarily involved the periosteum and surrounding tissues. Section showed that the normal marrow tissue was almost entirely replaced by cells of the large lymphocyte type, most of them showing eosinophile granulation. Transition forms of various kinds were numerous, but the whole vertebral tumor was made up of cells of leucoblastic origin with a scanty and delicate tissue reticulum, and with little evidence of new blood vessel formation. Nodules of similar histological structure were found in various organs of the body, arising from intravascular proliferation and seeming to have little influence on surrounding tissues excepting by pressure and atrophy. There was little manifestation on the part of the organ involved of a reaction in the nature of a resisting proliferation of the tissue cells or the development of a reticulum and blood vessels. Of two cases coming under their observation the writers stated that the first was a female child 3½ years of age and the second was a male child 5 years of age. In neither instance was an autopsy obtained, but the Roentgen ray findings were fairly characteristic, especially in regard to the proliferation of bone tissue in the skull producing a separation of the suture lines. In the second case there were characteristic changes in the long bones. The process seemed to be essentially a rarefaction and proliferation in the medullary cavities combined with a subperiosteal change lifting the periosteum over a variable distance from the surface of the shaft. The condition was distinguished from infantile scorbutus and rachitis by the absence of epiphyseal changes; from a myelomatous condition by the combination of the periosteal changes with the changes in the medullary cavity, and from sarcoma by the extent of the process. The change in the medullary portion of the bone appeared to be distinctly different from those of syphilis. The gross pathological changes in both of these cases were in exact accord with those described by Warthin. As far as the writers had been able to ascertain these were the first cases of chloroma in which the Roentgen ray findings had been recorded.

Dr. LeWald exhibited lantern slides of the Roentgenograms of these patients. He said the radiograph of the first patient taken January 29, 1913, showed marked enlargement of the mediastinal lymph nodes with slight displacement of the trachea to the right. Another radiograph taken three days later confirmed the finding of enlargement of the mediastinal lymph nodes. Examination of the skull on February 5th showed a distinct separation of the coronal sutures producing a wedge-shaped gap measuring one cm. at the vault. Radiographic exhibitions of the head on February 12th confirmed the previous finding of separation of the coronal sutures and also showed a separation of the parietal sutures. Stereoscopic examination confirmed the findings of separation of the sutures of the skull including those of the occipitoparietal regions. The first radiographic examination of the second patient made October 22, 1913, showed a distinct separation of the suture lines, especially marked in the region of the coronal and the parietal sutures. The separation of the frontal sutures measured about 2 cm. at the vertex. Examination of the chest showed an extensive involvement of the mediastinal lymph nodes. The diaphragm was pushed upwards on both sides, indicating a distinct enlargement of the liver and spleen. The bones of the upper extremities showed marked changes of a very peculiar type. The medullary portion of the long bones showed a peculiar mottling due to the rarefied areas. The periosteum was distinctly raised from the surface of the bone over the greater portion of the shaft. The peculiar combined involvement of the medullary cavity and the periosteum had not been observed in other bone lesions; from these findings a diagnosis of chloroma seemed justified, when taken in conjunction with the history of the case. Radiological examination of the lower extremities showed an involvement of the long bones exactly like that observed in the upper extremities.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE

A Criticism of "Whole Milk" Feeding.—Eric Pritchard (Amer. Med., 1916, xi, 19) offers the following reasons against the policy of "whole milk" feeding in infants. He agrees that while in general the method gives good results it does not give "the best" results. It is unwise to confine oneself to any one particular food or method of feeding. It makes little difference what food one employs provided the following essential conditions are complied with: (1) the necessary elements for growth, maintenance, heat and energy production must be supplied in quantities required in each particular case; (2) these elements must be presented in a digestible and assimilable form and suited to the special physiological make-up of the child, and (3) the food must be of such a nature as to exercise and develop latent digestive capacity. Instead of modifying the specific physiological make-up of a child to a certain kind of food, a task which is very often impossible, Pritchard believes in adapting the food to physiologic idiosyncracies found in every case. Food requirements can be approximately estimated in terms of calories and on a basis of weight and age, and, further, a mixed diet of proteins, fats and carbohydrates is better for a growing baby than any one or two of the proximate principles without the others. Dr. Vining's figures on the relative proportions of the elements of human and cow's milk are incorrect and Pritchard places the difference in the amount of lactose at 25 per cent instead of 10 per cent, and in the amount of protein at 100 per cent to 150 per cent, instead of less than 10 per cent. This is the central argument against the substitution of the one milk for the other in infant feeding. A food adaptable to a three months' infant should yield 495 calories and contain the three elements in the proportion found in human milk. The dilution of infants' food is too often excessive, the success of the "whole milk" method being probably based on the limited quanty of water used in that method. Individual adaptation is essential to the successful administration of food to infants and it is believed impossible for the physician to recognize pathological manifestations and modify the food accordingly if his practice is confined to one method of feeding. If the principles of percentage feeding are understood synthetic foods can be prepared in many ways to satisfy pathological manifestations and modify the food accordingly if his practice is confined to one of feeding. If the principles of percentage feeding are understood synthetic foods can be prepared in many ways to satisfy different physiological requirements. Dried milk if properly modified has all the advantages and few of the disadvantages of so-called dairy milk.

Prophylaxis and Treatment of Scarlet Fever.—Chantemesse, in Bulletin de l'academie de medicine for December 7, 1915, reports his experiences in a French military hospital with Milne's management in scarlatina. The procedure, which is applied as soon as the diagnosis is made or even if the condition is only suspected, consists in swabbing the tonsils and entire pharynx with a ten per cent solution of phenol in oil, and in rubbing oil of eucalyptus quickly over the patient's entire body, including the scalp. The throat swabbing is repeated every three house, day and night, for the first forty-eight hours, then twice a day for a week longer. The eucalyptus rubbing is carried out twice a day on the first two days, then daily for twenty days, and finally on alternate days up to the thirtieth day. Phenol intoxication, which might occur in small children through ingestion of the oil containing it, is guarded against by keeping a watch over the color of the urine in these little patients. Among thirty-one cases of scarlet fever treated under his supervision, Chantemesse observed no instance of transmission of the disease. The only person who acquired the disease in the hospital was a nurse who received the patients on admission and made the first prophylactic applications to their throats and skin surfaces, and was therefore exposed to the virus before its transmission could be prevented. Besides emphasiizng the prophylactic value of Milne's method, Chantemesse praises the latter as a remedial agency. Twenty-seven of his thirty-one cases went through only mild, uncomplicated attacks as a result of the treatment applied, the temperature always dropping to normal within forty-eight hours and complications not appearing. In the remaining four cases fever persisted ten days. These had been admitted only when the eruption had already existed several days and fever was already high. In two the swollen tonsils prevented proper disinfection of the pharynx, in another nephritis pre-existed, and in the fourth intense albuminuria was noted on admission. The only complications observed in the entire series were one instance of otitis media and one of temporary albuminuria, each condition appearing during convalescence, about the thirtieth day of the disease. Rubbing the oil of eucalyptus over the skin at the time of appearance of the eruption was observed, in one case out of ten, to cause itching, which, however, always disappeared within twenty-four hours upon discontinuing the procedure for one day and applying talcum powder. All patients were kept on a milk diet until the twenty-first day.—New York Medical Journal.

Syphilis of the Stomach.—G. M. Niles, Atlanta, Ga. (Journal A. M. A., Feb. 19, 1916), reports a case of syphilis of the stomach in a young man of 28 which he considers of interest on account of the difficulty of differentiation of the Wasserman test in these conditions. Syphilis of the stomach is more frequently recognized now than formerly, and Lockwood, in 1913, estimated that there were on record then about fifty cases of gastric syphilis. Nonspecific ulcerative conditions is must be remembered, however, may occur as frequently in syphilitics as in normal persons. It is said the late Hunter McGuire once said that much of his success was due to the fact that in obscure cases of disease he treated the patient for syphilis, and Niles thinks that many long suffering dyspeptics who have suffered all kinds of treatment without cure might receive benefit from specific treatment for syphilis.

Fermented Milk and Whey in Infant Feeding.—Dr. Mucklow, writing in the Medical Record, gives the following important rules to be observed in the feeding of infants:

Use certified milk. The bottles of milk when received from the dealer and the jars when containing the completed mixture should immediately be placed in the ice chamber of a refrigerator, either in the middle of the chamber with a cake of ice on either side of and in contact with them, or what is better, but usually impractical, in a pail full of cracked ice. They should be kept in an upright position until needed.

Use a Chapin cream dipper that has been accurately made to hold exactly one fluid ounce to measure the milk, whey, water and milk-sugar. The first dipperful from a bottle full of milk should be removed with a teaspoon to avoid spilling.

A dozen vials of a culture of Bulgarian bacilli should be purchased as often as required direct from the laboratory of the manufacturer immediately placed in the ice chamber of a refrigerator next to the ice, and there kept until used.

The water used in the formulas should be cold and should have been either distilled or boiled for five minutes.

All utensils should be boiled for five minutes just before using them.

Feedings should be warmed by standing nursing bottle containing same in water not hotter than the hand can bear, as too great a heat will toughen the curd.

Use a medium-sized nipple with a single opening. Make opening the proper size by running through it the red hot point of a No. 7 sewing needle, the eye end of the needle being inserted into a cork to protect the fingers. After each nursing turn the nipple inside out scrub clean, and place in borax water (one heaping teaspoonful of borax to a cupful of cold boiled water).

The whey is prepared as follows:

Skim off from the bottle from which the top milk for the formula has been removed enough additional dipperfuls to make a total of eight dipperfuls removed from the bottle.

Pour the resulting skimmed milk into a quart preserve jar.

Add three teaspoonfuls of a good essence of pepsin and stir.

Seal jar and stand in a kettleful of water as hot as hand can bear for one half hour.

Break up the curd with a long-handled fork.

Strain through two thicknesses of the finest-meshed cheesecloth one foot square placed on a strainer over a pitcher.

The Voice Sign in Tabes: Technique of Elicitation. Studies in Neurological Technique, No. 5.—By Walter B. Swift, M.D., Boston, Mass. Review of Neurology and Psychiatry, October, 1915. In summarizing, let me once more call your attention to my papers on the characteristics ('Observations on the Voice in Tabes—A Voice Sign." Amer. Journ. of Insanity, Oct., 1915) of the voice sign in tabes, and on the voice sign ("The Voice in Tabes and the Treatment of Vocal Ataxia." Journ. of Nerv. and Ment. Dis., Oct., 1915) itself as a characteristic symptom of ataxia. In the present paper I have confined myself entirely to the technique of elicitation of this voice sign. In final form the test resolves itself into this formula: Let the physician request the patient to utter the following sounds—"e" (as in eel), "t," "journals," and 'Time and tide wait for no man."

Profiressive Muscular Atrophy: Case and Treatment. Studies in Speech Disorder No. 2. By Walter B. Swift, M.D., Boston, Mass. The Boston Medical and Surgical Journal, Nov. 4, 1915. Case of progressive muscular atrophy with involvement of muscles of the neck to such an extent as to render some sounds impossible and others indistinct, is relieved at once, and afterwards whenever applied, by giving the throat musculature staunch, firm support by hand, special collar or high collar applied to help out of the action of those neck muscles.

The Development of a Mental Defective by Vocal Drill. Studies in Speech Disorder No. 3.—By Walter B. Swift, M.D., Boston, Mass. The Boston Medical and Surgical Journal, Nov. 11, 1915. Defective mentality subjected to an eight months' intensive drill, with the result that a remarkable and unexpected mental development followed, showing in new initiative, wider interests, an extended observation and other minor mental manifestations.

Roentgen-ray Examination of the Large Intestine in Infants and Children.—Ignaz Peteri (Jahrbuch. f. Kinderheil., Aug., 1915) discusses the value of the x-rays in the diagnosis and examination of the large intestines in children. He believes that much light can be thrown on the topography and function of this organ by means of the x-rays. Since bismuth in large amount has been found harmful to infants other materials have been tried for the purpose of rendering the intestines visible by the rays. The author uses thorium. In order to make the thorium enter the large intestine a large amount must be fed to the child which it is difficult to make him swallow. The author introduces it by rectum. He uses bismuth subnitrate and carbonate, zirconium oxy-anhydride, with thorium oxy-anhydride, and barium sulphate suspended in a liquid. The suspension has proven entire innocuous in infants. The author's observations included children up to the age of six years. The colon must be entirely filled and the fluid retained in place by an obturator while the rays are being used. In spastic obstipation the colon is sure to be contracted. The rays assist in making a diagnosis of the form and location of abnormalities of the intestine, dilitation, and diaphragmatic hernias. It shows numerous normal variations in the conformation of the colon. It also gives the opportunity of observing the function of the colon, the peristalsis, antiperistalsis, and other muscular contractions of the bowel. There are three sorts of movements of the colon, small movements, which bring about mixing of the contents, retrograde movements, and gross movements which cause the feces to pass rapidly down the intestine. The author's observations deal with twenty-eight children.

Imperforate Hymen in a Baby.—Dr. Herbert R. Spencer communicates to the Lancet for April 15th a note on this unusual condition. For want of a simple examination at birth, he says, imperforate hymen escapes notice till menstruation occurs, when the pain, distension, ill health, and nonappearance of the menstrual discharge lead to a gynecological examination and the condition is discovered. Unfortunately, sometimes the distension of the genital tract has involved the Fallopian tubes when the case is seen; the patient has been rendered sterile, and the risk of treatment is much increased. All the cases Doctor Spencer has seen have ended in recovery after evacuation of the menstrual blood through an incision in the hymen.

The object of the note is to urge obstetricians to make a routine inspection of the vulva of female babies before the puerperal attendance ceases. If the hymen is found to be imperforate and bulged forward by secretion, a snip with a pair of scissors will save the patient from a grave risk to her fertility, health, and even life. The point is illustrated by a case in which the malformation was discovered by an observant mother.

A baby girl eleven weeks old was brought to hospital on December 4, 1915, on account of a swelling in the vulva which the mother had first noticed a fortnight previously. On inspection the labia were separated by a cystic swelling of the size of a small marble which became a little more prominent when the infant cried. It was obviously the imperforate hymen. Its most prominent part was seized with mouse tooth forceps and an elliptical piece was snipped out; about a dram of mucus escaped from the vagina, and the hymen sank back to its normal position. A thin strand of oiled gauze was inserted into the hymeneal opening for a few days. A fortnight later the parts had a normal appearance.—New York Medical Journal.

The Question of Child Labor.—The question of child labor is a vexed one in all parts of the world. In Great Britian the matter has been adjusted in a satisfactory manner for a considerable time, but in various parts of Europe child labor flourishes. It is an evil from all points of view and to some extent a physical and mental menace to the race.

In America child labor has held sway too long and in some parts of the country has approached the proportions of a public scandal. However, now public opinion seems to have been fully aroused to the harmfulness of the system, remarks Pediatrics for February, 1916, and the result has been the introduction of the Keating-Owen Child Labor Bill.

Studies of child labor have been carried on by the Massachusetts State Board of Labor, and recently this board requested that Assistant Surgeon M. V. Safford, of the Public Health Service, should be authorized to assist the board in the problems which confronted it with respect to the employment of child labor in the State, and he was accordingly detailed for this purpose. The work already accomplished is referred to at some length in the Annual Report of the Surgeon General of the Public Health Service for the fiscal year 1915, published recently.

By recent State legislation the administration of practically all laws and regulations relating to the conduct of industries and the employment of labor in Massachusetts has been placed in the hands of this board, together with complete jurisdiction in matters of industrial hygiene.

Doctor Safford commenced his investigations in May, and under his direction comprehensive physical examination was made of minors employed in the textile industries of the State in accordance with a prescribed scheme calculated to bring out and record abnormal conditions possibly attributable to occupation or working conditions.

For instance, an undue proportion of the boys employed have been found to be under height and weight for the ages given, but such deficiencies bear no relation to the duration of employment. To some extent such deficiencies are more apparent than real and are to be accounted for by successful evasion of the State laws with respect to the age and hours of employment of minors. The same thing is apparent, however, in groups of boys whose ages would not seem open to question and appear to be accounted for by the fact that mill work is chiefly "woman's work" and is likely to attract males who by lack of physical strength or other causes are ill fitted to do anything else, or, in other words, that in this kind of investigation one is dealing to a great extent with material that was pathological from the start. So far as the investigation has gone, it may be said that, on the whole, considering that much of the work of mill employees calls for no great degree of intelligence than enough to exert physical strength, there have not been found a surprising proportion of deficient persons.

Any law with regard to child labor should certainly provide that no child under sixteen years of age should work for long hours, not longer, if so long as eight hours a day, and there can be little doubt that reforms in this direction are urgently needed.—New York Medical Journal.

Treatment of Summer Diarrhea in Children.—In the Journal des practiciens for June 19, 1915, Girou outlines his experiences with hordenine sulphate. According to an abstract of this article in Pediatrics for November, 1915, he restricts the diet to water or glucose water for one of two days and washes the stomach if there is much vomiting. A collargol irrigation of the bowel is given if the stools are very fetid, and the child is purged with calomel or castor oil. Lactic acid, betol, or tannigen follows for an antiseptic action, and the general condition is cared for by baths, friction, or the subcutaneous injection of normal salt solution to combat the loss of fluid. Hordenine sulphate is given in doses of seventy-five mg. for children three months old or younger, and this is increased by twenty-five mg. for each month of age over three months. The drug is given preferably by subcutaneous injection.

Individualizing in Infant Feeding.—Niemann declares that the proportion of women who are unable to suckle their infants is certainly smaller than the percentage of infants who are unable to nurse or do not thrive on breast milk. Attention has been concentrated hitherto on the preparation of the artificial food for such infants, and too little heed paid to the infants themselves. Our premises as to infant feeding are based on averages, but the babe at the breast does not get an average milk, but a particular milk from a particular woman at a particular time. The milk comes out of the darkness and disappears into the darkness without anyone seeing it. The child gets its food thus fresh and unmodified by air and light, which we know soon start destructive processes in the fat of milk even when the milk seems still fresh and sweet.

The child gets varying amounts of milk from the breast at different times, and the composition of the milk probably fluctuates from time to time. This entails a variety in the infant's food which Nature evidently intends, but which is lacking in artificial feeding. The better the care given the bottle baby, the greater the monotony in the regular amounts and in the composition of the artificial food given it, and Niemann queries whether this monotony may not be the cause or one of the causes why bottle babies do not thrive so well as the breast fed, especially in institutions. It seems to be impossible for institutions to show such fine specimens of artificially fed infants as are often raised on the bottle even in the homes of the poor. Some variety in quality and quantity according to the individual needs at the time is certainly advisable for a certain proportion of infants at least.

Niemann relates further experiences which demonstrate that certain infants thrive better on less water than others. In combating a tendency to vomit, he has given quite young infants the usual milk mixture without the water, thus more like a thick soup, and the children thrived on it. The chart of one is given showing the regular increase in weight on half the usual amount of water. During the fifth month the weight became stationary and increasing the amount of water did no good, but the development became normal again when the amount of the milk mixture was increased.—Deut. Med. Wochens.

Popular Fallacies Concerning Squint.—There is a popular idea, asserts the British Journal of Children's Diseases, that children "grow out of squint." There is some truth in this idea. Many a very young child has been seen to squint when it is ill. Irritation may make it squint, but when the irritation is withdrawn the squint will disappear. These are temporary cases. Then there are children who grow up with a squint and when they are well on through their teens, at the time of puberty, the eyes of a few of them will get straighter, or almost straight, and the squint will be noticed to be bad only when they are tired and in the evening. The temporary squint of the infant does no harm. But then it is a warning that there may exist a weak brain control of the eyes, and a hint to be watchful when the child goes to school or is attacked by fever. The case of the children who grow up with the squint is very different. Even though their eyes should come straight they never recover the effects of the squint. They have lost their precious faculty of binocular vision, and the sight of the eye that was crossed is gone for all practical purposes; it is reduced to the level of a rabbit's eye; it has a field of vision, but no macula, and no fine visual acuity.

Recurring Colds in Children.—Peter D. McCornack (Western Medicine, March, 1915) says that recurrent colds are usually found in children suffering from the exudative diathesis, and treatment must be directed to the underlying condition. Such children usually eat more than they need, particularly of carbohydrates and fats. The diet should, therefore, be modified by the reduction or elimination of sugar, the use of skimmed milk, or the elimination of all milk, and the provision of carbohydrates only in the form of the usual vegetables, cereals, and coarse breads. Meat should be allowed only three times a week. The clothing should be light and warm; the child should receive a warm bath daily, followed by a cool sponge bath and brisk rubbing; the bowels should be kept open; and the children should live in the fresh air day and night. No expectorants should be given, but the lithemia should be attacked by large doses of sodium bicarbonate or salicylate. Thyroid extract often proves of value merely as a tonic, and adrenaline gives relief in extreme attacks.

Fermentative Diarrhea in Infants (Carbohydrate Form).—Lewis Webb Hill (Boston Medical and Surgical Journal, April 6) divides the diarrheas of infancy into three classes, infectious, nervous, and fermentative. The last is caused by the excessive decomposition of either carbohydrate or proteid material in the intestine. The carbohydrate type is the commoner and includes nearly all cases of diarrhea with strongly acid stools. The three principal causes are too high a sugar percentage in the food, too much food at a time, and bad milk. The one important principle in the treatment of such a case is to give a food low in carbohydrate until normal conditions are restored. If this food can contain a considerable amount of protein, in an easily digestible form, a great deal will have been gained, for the reaction of the intestinal contents can be changed from acid to alkaline by the alkaline end products of protein disintegration, and the source of the diarrhea removed. It is the high protein and relatively low carbohydrate percentage that has made egg white milk and its modifications valuable. The great drawback is their difficulty of preparation. The use of skim milk dilutions, with the addition of powdered casein meets the indication and such mixtures are much more simple. He recommends for such babies under six months old a mixture of skim milk and water with enough calcium casein to bring the protein proportion up to 2.60 per cent—giving the formula: Fat, 0.25; sugar, 2.25; protein, 2.60. For babies over six months old the same dilution of casein is added to three per cent. One third of an ounce of powdered casein in a mixture of sixteen ounces of skim milk and water is used, but the powdered milk and sixteen ounces of water raises the protein proportion to 2.60 per cent. In a forty-eight ounce mixture, half skim milk and half water, two thirds of an ounce of powdered casein raises the protein to three per cent. The amount given at each feeding depends on the individual baby, but in general slightly smaller amounts are given than would be given to a well baby of the same age and weight. The usual course is that after a day or two of this feeding the stools begin to diminish in number, become more yellow, and after three to five days become pasty, light yellowish brown in color, and alkaline in reaction. After the diarrhea has stopped, whole milk is added to make the fat proportion from one to two per cent, and if this is borne well, in two or three days enough sugar is added to make the sugar proportion about 3.5 per cent. Malt sugar is the best to use Sometimes the powdered casein is continued, sometimes not, but he has not fed any case on it longer than ten days. If the malt sugar causes no diarrhea, a gradual addition of sugar and a return to normal feeding are made. No drugs should be given in these cases, unless there is tenesmus and discomfort at defecation and a great many stools when it may be wise to give small doses of opium. Hill does not believe in the initial dose of castor oil.

Practical Lunches for School Children.—Washington, D. C. What shall school children be given to eat at noon in the lunch basket, at the home lunch table, or in the lunch room operated by the school authorities? To help answer this question, which almost every mother and many educational authorities are asking constantly, the U. S. Department of Agriculture, through the Office of Home Economics, has just issued Farmers' Bulletin No. 712, "School Lunches." This bulletin was prepared by Miss Caroline L. Hunt and Miss Mabel Ward, under the direction of Dr. C. F. Langworthy of the States Relation Service The bulletin, after discussing the general principles of feeding school children to provide for activity and develop them into sturdy manhood and womanhood, gives a number of simple and appetizing menus for the school lunch basket and bills-of-fare and recipes for preparing inexpensive and nourishing noonday meals or hot dishes for children, either at home, on a school stove, or in the domestic science kitchen.

Relation of Lunch to Other Meals.—In feeding a child or anyone else, the authors of the bulletin point out, it is not wise to think of any one meal apart from the other two. It is seldom convenient to provide at one meal all the materials needed by a growing body, and those which are omitted from one meal should be supplied by one of the other meals. The noon meal for children, however, where food must be prepared at home in the morning to be eaten elsewhere at noon, or where the children must hurry home, eat quickly, and then rush back to school, offers special difficulties and deserves the careful attention of parents.

Dietary Essentials for the Growing Child.—Before it is possible to plan a rational basket or other luncheon for children, it is necessary for the mother to understand the general essentials of diet for young people. These essentials in general are an abundance of simple foods, carefully prepared, and of sufficient variety to provide energy, repair wastes, provide elements for building bone and tissue, and stimulate growth. To do this most effectively the three meals each day must supply the child with sufficient food from each of the following classes:

1. Creamy or Starchy Foods.—Cereals, eaten principally as bread, supply nearly half of the protein (commonly thought of as tissue-building material) and nearly two-thirds of the fuel or energy in the American diet. The quality of the bread, therefore, is extremely important. Its crust should be crisp and deep (indicating thorough baking) but not hard or burned. It should be light and free from any suggestion of sourness or rancidity. The crumb should be elastic and yet capable of being easily broken up in the mouth without forming a sticky mass, or being too dry to taste good. These qualities can be secured in rolls and biscuit as well as in ordinary bread, provided they are cooked thoroughly. The objection to hot bread is due to the fact that undercooking may leave it soggy on the inside, rather than because such breads are eaten hot. The child's appetite for bread may be stimulated by using different kinds of bread, swieback and crackers, by the addition of raisins, currants, or nut meats, and sometimes by cutting the slices into fancy shapes.

Cereal mushes and ready-to-eat breakfast foods supply nearly the same nutrients as bread, a half cupful of cooked cereal being about equivalent to a good sized slice of bread. A tablespoon of cream is about equivalent in fat to a liberal spreading of butter.

2. Protein-rich Foods.—While bread and cereals come near to fulfilling one of the important requirements of diet—a correct proportion of nutrients providing fuel only and those useful for body building—other foods which provide in larger proportion as compared with fuel should not be neglected. These foods include dried beans, cowpeas, peas, peanuts, and almonds, walnuts, and other nuts. Nuts, of course, contain considerable fat. Milk is an absolute essential, not only because it contains a large number of nourishing substances in forms easily assimilated, but also because, in some way not now fully understood, milk seems to promote growth and help the body of a child make good use of other foods. Milk is rich in most kinds of mineral water, particularly lime, useful in the development of bone and tissue.

Milk should never be omitted wholly from the diet of a child. If not used at luncheon it should appear at other meals. For luncheon, however, it has been found that such dishes as milk toast, milk soups made with vegetables, fish or vegetable chowders, and cocoa are valuable foods, easily prepared at home or in the school, because they require no oven and call only for simple utensils. White sauce made of vegetable juices, milk, or broth, differ from milk soup largely in that they contain more flour. When considering milk, the food value of skim milk, which contains a larger percentage of protein though less fat than full milk, should not be overlooked.

Eggs, the next of the proteid foods commonly given to children, contain much iron and their yolks are rich in fat.

3. The Fatty Foods.—The fatty foods, such as butter, cream, salad oils, bacon, and similar foods, are important sources of energy and mourishment for the growing body. Fats are best given in such simple forms rather than in rich pastries or sweets.

4. Fresh Vegetables and fruits.—Because ordinary vegetables

such as potatoes, greens, lettuce, green peas and beans, asparagus, and others, and the ordinary fruits do not contain much fat or protein, their value in the child's diet is frequently underestimated. These things, however, should be considered a necessary part of the diet of the child for the very important reason that they furnish mineral and other materials required to form bone and tissue as well as to repair waste and supply some energy. Green vegetables are valuable particularly because they contain iron in forms which the body can utilize. Fruits contain a considerable percentage of sugar, especially when they are dried, and sugar is a quickly-absorbed fuel food. As things eaten raw transmit disease germs, care should be taken to wash vegetables and fruit thoroughly in several waters. Many fruits, especially those with skins, can be dipped safely into boiling water, while those with thick skins, such as oranges, bananas, and apples, may be safely washed even with soap. Dried fruits when washed and put into an oven to dry, absorb some of the water, and thus are softened and improved in taste.

5. Sweets and Desserts.—Sugar, as has been said, is a quickly absorbed fuel food and simple sweets have their place in the diet of all children. If not served between meals or at times when they destroy the appetite for other needed foods, there is no objection to them. They may be served in the form of cake not rich enough to be classed as pastry, cookies, sweet chocolate, simple candy, honey, dried or preserved fruits, maple sugar, and loaf sugar. In general, fruits, fresh, baked, or stewed, or raw, and simple sweets are much better desserts for children than rich pastry which contains a large amount of fat.

Infant Mortality Still High.—The enormous waste of infant life which still goes on, although medical science has done and is doing much to arrest it, is shown by the exceedingly high death rates which prevail among infants under 1 year of age. Of 100,000 native white boy babies born alive, 4,975, or almost 5 per cent, die during the first month, and 12,602, or 12.6 per cent, die within one year. The girl baby's chance of life is considerably better, the death rate among native white females during the first month being 3,894 per 100,000 born alive, or less than 4 per cent, and during the first year 10,460 per 100,000, or nearly 10.5 per cent.

On its first birthday, however, the likelihood that a child will die within the year is only about one-fourth as great as it was at birth, the death rate among native whites during the second year being 2,841 per 100,000 for males and 2,610 per 100,000 for females. The rate continues to decrease until the twelfth year of life—that is, the period between the eleventh and twelfth birthdays—during which it is only 228 per 100,000 for males and 198 per 100,000 for females. This, the figures indicate, is the healthiest year of life among native whites. Thereafter there is a continuous increase in the death rate from year to year. During the forty-eighth year of life, in the case of native white males, it is 1,267 per 100,000, or almost exactly what it was during the third year, 1,266; during the sixty-second year it is 2,919 per 100,000, or a little more than during the second year, 2,841; and during the eightieth year it is 12,184, or somewhat less than during the first year, 12,602. Similarly, among native white females the rate during the fiftieth year, 1,120, is a little less than during the third year, 1,144; during the sixty-third year it is 2,548, or somewhat less than during the second, 2,610; and during the eightieth it is 10,901 per 100,000, or a little more than during the first, 10,460. The native white man at the age of 102 and the native white woman at 99 have approximately the same prospect of dying within one month that they had at birth.

BOOK REVIEWS

The Ductless Glandular Diseases, by Wilhelm Falta, Vienna, translated and edited by Milton K. Meyers, M.D., with a foreword by Archibald E. Garrod, M.D., (Oxon.) F.R.C.P. (London), F.R.S., with 101 illustrations in the Text. Second edition, thoroughly revised. 590 pages. Handsome buckram bindings. $7.00 net. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia.

The American Editor has taken advantage of the opportunity and this edition is now most thoroughly revised and brought right up abreast with the latest teachings on the ductless glands. The work of Professor Falta on the ductless glands is widely known to those who are engaged in research upon the subject. As Dr. Garrod points out in his "foreword," he has made important contributions to our knowledge of experimental chemistry, and his qualifications for dealing with the diseases of the ductless glands are those both of a research worker and of a clinician. A volume by a writer so qualified has for long been wanted, since most of the monographs upon the subject have been written by research workers to whom its clinical aspects have occupied a somewhat subordinate position. From Professor Falta's hands has come a treatise in which both sides receive a proportionate attention and an exhaustive study. Its usefulness for English readers is increased by the addenda embodying for the most part the views of English and American writers which the translator and editor, Dr. Meyers, has appended to almost every chapter.

In this work the internal secretions are studied most carefully with an idea of realizing how wide is the field of their activities. From the text matter we learn that in addition to the control of metabolism, or rather in virtue of that control, the endocrine glands exert immense influence upon growth and development; and that their harmonic functions are exercised first in the direction of stimulation, and second in that of restraint. For the first time we are able to understand that this control is not wholly one-sided; this controlling agent according to the authors is able to curb as well as to urge on, and we are taught to think of inhibiting as well as of exciting hormones.

Professor Falta is a believer in the view that the symptoms of diseases of the ductless glands are due either to diminution or to excess of their internal secretion, and not to alterations in the character of the secretion. He devotes much argument to refuting the opposite contention, and with considerable success. His attitude in this matter is conservative, for he does not consider it right to talk of pluriglandular affections when one ductless gland can be shown to have suffered first and principally, and others have merely become secondarily involved in the same pathological process. He would reserve the term for those cases in which the morbid process involves the whole ductless glandular system, or at least a large part of it, with some uniformity. The relations of the nervous system to the regulation of internal secretion are fully considered, especially in their bearing upon the pathogenesis of diabetes. From the clinician's point of view the great merits of the book are the clearness with which the various groups of symptom-complexes are differentiated, and the attention given to the important subject of treatment. The illustrations are abundant and excellent, and the type is clear and readable.

The work is a most valuable one because it combines besides observation with experimental research in the laboratory. Professor Falta's contributions to our knowldge of pathological chemistry are widely known, and he has been led to the study of the regulators of metabolism by his interest in the chemical processes which it is their function to control. This is a work that all advanced students of internal medicine should have for ready reference in their library.

Arteriosclerosis. A Consideration of the prolongation of Life and Efficiency after Forty, by Louis Faugeres Bishop, A.M., M.D., Clinical Professor of Heart and Circulatory Diseases. Fordham University, School of Medicine, New York City; Consulting in Cardiovascular Diseases to Mercy Hospital, Hemstead. Second Impression, 550 pages, cloth binding, $3.50. Oxford University Press, 35 West 32d Street, New York City, Publishers.

Dr. Bishop devotes the first five chapters of this volume to the Occurrence, Definition, Causes, Natural History and Symptoms of Arteriosclerosis. Contrary to previous teaching, the author considers arteriosclerosis as a disease of the cells of the whole body, and since the circulatory system pervades every part of the body, it bears the brunt of the attack and shows the most conspicuous result of the damage that really begins in the ultimate cells. Bishop holds to the belief that arteriosclerosis arises when the cells of the body become sensitive to particular proteins which create irritation something in the nature of a mild anaphalaxis which continued over a long period of time brings about changes in structure which constitute a disease of the cardio-vascular system known as arteriosclerosis. Bishop believes that the answer to the riddle will be found in the obscure field of protein bio-chemistry.

In his preface, he states, "The modern age has lost much of the mental rest that came to previous generations through a respect for authority and a conviction that, whether contented or not the average person was destined to remain in that condition of life in which he found himself. Undue ambition coming from the great opportunities of the time, together with a sensitiveness to criticism and to the ordinary knocks of life born of a protected condition of society, often react through the nervous system upon the chemical organs of the body, preparing the way for arteriosclerosis."

After explaining his own theories as to the causation of cardiovascular diseases, Bishop quotes at length from the opinions of the leading American writers on this subject, so that this volume while in the main is an expression of the author's views on the subject, it may also be accepted as an American expression. It is a book that every physician engaged in the general practice of medicine should not only have in his library, but study with due care and deliberation.

The Mental Health of the School Child, by J. E. Wallace Wallin, Ph.D., Professor of Clinical Psychology and Director of Psycho-Educational Clinic, School of Education, University of Pittsburgh. Director-Elect of Psycho-Educational Clinic, St. Louis Public Schools. 250 pages, handsome cloth bindings, $2.00 net. Yale University Press, 135 Elm Street, New Haven, Conn., Publishers.

The wide spread interest in social and educational problems, particularly in abnormal children in the large centers of population has stimulated the preparation of the text book and the publication of this volume. Dr. Wallin has made elaborate and adequate studies of the abnormal child, and this volume records an account of the results of his studies which is of great service to social workers and physicians alike, but most of all to teachers, principals and school superintendents. It contains invaluable guidance in recognizing, identifying, studying and training feeble-minded and backward children. The author seems to have gathered together material hitherto wholly unavailable. He also knows how to marshal it skillfully and to use it artistically. According to statistics recorded, more than 72 per cent of the 230,243 children examined by the school authorities in the City of New York in 1911 were reported as backward or delinquent and requiring treatment. Dr. Wallin points out that a child abnormal in body probably cannot remain normal in mind and will tend to become morally perverse and criminal. The author has made a careful and prolonged investigation of the child mind and his conclusions are based on statistical studies. Realizing such facts as the above, he has outlined in this volume, a definite and most effective means of correcting such deficiencies. The book contains tables which will be of the greatest service to all interested in the improvements of the mental conditions of children. It is a volume that we highly commend to physicians, school superintendents, principals and teachers. The Yale University Press is also to be highly commended for giving this remarkable book to the professional world.

Problems of Genetics, Silliman Lectures delivered at Yale University, by William Bateson, M.A., F.R.S., Director of the John Innes Horticultural Institution, Hon. Fellow of St. John's College, Cambridge, and formerly Professor of Biology in the University. 8vo., two color plates, diagrams and illustrations; 250 pages, cloth bindings. Price $4.00 net; postage 25 cents extra. The Yale University Press, 135 Elm Street, New Haven, Conn., Publishers.

This volume embraces the substance of a series of lectures on the subject of Genetics delivered at the Yale University by Wm. Bateson, M.A., F.R.S. It is a masterly interpretation of Mendel's Principles and discusses the wider problems of biology in the light of knowledge acquired by Mendelian methods of analysis. The volume makes no pretense at being a treatise and the number of illustrative cases in within a moderate compass. The facts contained are largely given on the authority of prominent investigators; many of the illustrative cases are taken from American Natural History. It is a most interesting series of lectures. The Genetic problems are many and varied and their solution is extremely difficult, but of vital importance to physicians. It is a valuable contribution to the subject and as such we heartily commend it to the profession.

A Manual of Gynaecology and Pelvic Surgery, for Students and Practitioners, by Roland E. Skeel, A.M., M.S., M.D., Associate Clinical Professor of Gynaecology, Medical School of Western Reserve University; Visiting Surgeon and Gynaecologist to St. Luke's Hospital, Cleveland; Fellow of American Association of Obstetricians and Gynaecologists; Fellow of American College of Surgeons. 650 pages, limp cloth binding with 289 illustrations, $3.00. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, Publishers.

This is a handy, concise manual intended to furnish a practical working knowledge of gynaecology with especial emphasis upon diagnosis and treatment. The work is profusely illustrated which adds much to the text and simplifies and makes plain the subject under discussion. At the end of each chapter, the author has appended references pertaining to the particular subject under discussion which will facilitate a further search into the subject provided the reader desires a comprehensive investigation on a particular subject. The references are intended for collateral reading by students for whom medical articles and society transactions may not be available.

The author treats the subject of gynaecology as a highly specialized branch of general surgery bearing a close relationship to obstetrics. He also believes that a thorough knowledge of general medicine is a pre-requisite for a proper appreciation of its relative importance in this particular specialty. This is a very handy manual for the student and busy practitioner presenting the subject in a concise, practical way, and it gives us pleasure to commend it to the profession.

Diseases of the Heart, by James MacKenzie, M.D., F.R.C.P., Physician to the London Hospital, in charge of the Cardiac Dept., and Consulting Physician to the Victoria Hospital; Third Edition, revised and enlarged, 470 pages. Handsome buckram binding, $5.50 net. Oxford University Press, London, American Branch 35 West 32-nd Street, New York City.

The advances made in the knowledge of diseases of the heart since the last edition published in 1910, have necessitated the rewriting of the greater portion of this book. The principal changes are mainly along the lines of a clearer differentiation of the physical signs of diseases of the heart, and for this purpose Dr. MacKenzie has introduced the electro-cardiogram as a diagnostic aid. Another change is the bearing of heart manifestations on the question of heart failures. Dr. MacKenzie has attempted to base the treatment of diseases of the organ on a sound and scientific principle. Heretofore, the study of cardiac physiology and therapy has been based on what happens to normal hearts with normal rhythm. The author's investigations have convinced him that in hearts affected by disease, the reaction of the heart, the stimulation, is profoundly altered. In consequence of this, the author has found it necessary that the physiology of diseased hearts, and especially of those with abnormal rhythm should be carefully studied; all of which the author clearly outlines in this new revision.

As the nature of the heart affection can only be inferred from the presence of one or more symptoms the author's object has been to ascertain the mechanism by which the symptoms are produced, to find out their relationship to organic changes in the hearts to ascertain their prognostic significance, and finally to employ them as a guide for treatment.

The author, when referring to the digital examination of arteries tells us that the trained finger is the best guide that we have to judge the blood-pressure of an artery but not for a moment does Dr. MacKenzie depreciate the values of instrumentations in arriving at exact and scientific diagnosis.

Probably few physicians know what is meant by "nodal rhythm" and equally few are well enough trained in modern methods to know that this nodal rhythm is present in the majority of cases of severe heart failure, and in a great many instances, a breakdown is directly attributable to its inception, nodal rhythm being a condition in which the contraction wave arises in the auriculo ventricular node in distinction from sinoauricular node, with the result that incoordination between the auricle and ventricle is established the ventricle contracting before the auricle. In disease, or distention, of the auricle the passage of the contraction wave from the sinoauricular node may be blocked. So, too, says Dr. MacKenzie, "it is important to remember that digitalis may at times produce an artificial heart block; and that it is particularly prone to do this when such a condition of the auricle as we have just described is present."

Dr. MacKenzie in this work, besides dealing with and describing abnormal physiological states from an etiological point of view, also considers in great detail the pointing out of conditions in which many drugs chiefly digitalis, are now employed in a haphazard manner, which often do more harm than good.

The closing pages are devoted mainly to the theory of cardiac conditions. There can be no doubt that MacKenzie's first edition marked an epoch in the study of cardiac affections, and there can be equally no doubt that the appearance of his second edition in an American reprint will be of the greatest possible benefit to physicians and patients alike upon this side of the water. The many illustrations, the large type, the excellent language, and above all the scientific stand-point of the author cannot fail to interest medical men who desire to be more than routine dispensers of powerful drugs.

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PEDIATRICS

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EDITORIAL

THE EVIL EFFECTS OF TOO MUCH EDUCATION WITH THE YOUNG

Complaints are at times made in this country that the health, and particularly the eyesight of children, is permanently injured by a too close application to the desk. However, the lot of children at school here is a light and easy one, when compared to that of their juvenile fellow-students in Germany. There, indeed, if report does not speak falsely, the brain work that quite a young child is expected to get through in a day is sufficient to cause much alarm. In Germany many subjects are taught in the schools which in other countries are included in the university course. German parents are now awakening to the dangers of this cramming system, and are becoming day by day more nervous as to the ultimate result on the physique and stamina of the rising generation. Professor Eulenburg some time ago, in the Deutsche Medicinische Wochenschrift, criticizes the hours of work of a celebrated Berlin "gymnasium," where the sixth class has in the week thirty-three lessons. Dr. Eulenburg points out that according to Briesbach the brain of an overtaxed child requires several hours rest before regaining its normal faculties; and Burgerstein says that boys of twelve years of age require as a rule an interval of several minutes after forty minutes devotion to study. Although there is no country in the world where the young are subjected to such brain pressure in the schools as Germany, yet the trend of modern education both here and in England, points the same way. The worst feature of the case is that young children are not only compelled to learn an enormous quantity of subjects, but also so many useless ones. Elementary schools should teach nothing but elementary subjects. It certainly seems that the results of modern education are in no way commensurate with the trouble and expense incurred.

THE HEALTHFULNESS OF CRYING FOR INFANTS

A "good cry" is an expression often made use of, and at first sight seems decidedly misapplied, but upon a little consideration it will be allowed that after all in many instances it is not an inappropriate term. Of course, crying is usually associated in one's mind with grief or pain, although even when such is the case crying is a relief and thus does good. There are many occasions, however, when crying, and violent crying, is of the most decided benefit to children. In reference to this the Hospital says: "In children a great change takes place during crying in the manner in which the respiration is carried on. Expirations are prolonged sometimes for as much as half a minute, and are interrupted by short inspirations. During expiration, the glottis is contracted so that intrapulmonary pressure rises considerably, and there can be but little doubt that it is the equal distribution of this increased air pressure throughout the whole of the chest leading to dilation of portions of the lung that have become more or less collapsed, that is the explanation of the great benefit which often results from crying, in cases of infantile bronchitis, and of the large discharge of bronchial mucus which so often follows. Children may become very blue during the paroxysm, but the deep respirations, which succeed quickly, restore the circulation to a better condition than before in consequence of the large lung space available. It might be added, in cases of empyema, too, when pus has collected, that if a child when being operated on cries, it is a great help towards getting rid of the purulent matter.

RENAL COLIC IN INFANTS

That renal colic does occur in infants is more than likely, although there is not universal agreement on the point owing to the difficulty in diagnosing between renal and intestinal colic. Many cases have been recorded where all the symptoms of renal colic were present. It is true that no distinct calculus has been found, on the other hand abundance of free uric acid has been detected on analysis of the urine, and it is the opinion of several whose experience should entitle their views to consideration that this disease is much more common with infants than is generally believed to be the case. The affection is seldom met with among the children of the poor, but it is almost wholly confined to the offspring of the rich. The conditions of life under which each class lives must be held responsible for this phenomenon.

The poor man has not the same opportunity of contracting gout himself, nor the likelihood of inheriting a gouty diathesis that the rich man has. It is one of the peculiar privileges of the moneyed man to be more prone to the formation of uric acid and to suffer from that state designated gout.

CHILD LABOR

If the federal child labor bill becomes a law the nation will not receive all the benefit it should unless it provides school opportunities. This was the dictum of Mrs. Florence Kelly, secretary of the National Consumers League, in addressing the forty-third national conference of Charities and Correction at Indianapolis May 10-17. "The children of the steerage have better school facilities when they arrive in our large cities," she said, "than many of our native children in the poorer communities of our backward states. There should be federal aid for the elimination of illiteracy."

This address occurred at the main evening session of the division on Children, under the chairmanship of Miss Julia C. Lathrop of the Federal Children's Bureau. President John H. Finley of the University of the State of New York on the same occasion showed how widespread is the social service work of the public schools. Under Miss Lathrop's direction six sessions of the conference were held, devoted entirely to the schools and welfare work.

The conference at Indianapolis lasted eight days and broke all previous records for size of gatherings of men and women engaged professionally in social work. The main divisions of discussion were upon children, corrections, the family and the community, feeble-mindedness and insanity, health, inebriety, promotion of social programs, public and private charities and employment. The next session will be held at Pittsburg during the spring of 1917 under the presidency of Frederick Almy, secretary of the Buffalo Charity Organization Society. Mr. Almy has already announced as the subject for his presidential address, "The End of Poverty."

Several meetings were arranged on the subject of social hygiene and there were special meetings of associations of children's home superintendents and the heads of other types of children's institutions, juvenile court judges, probation officers, etc. A number of the delegates were official representatives of state federations of women's clubs who were expecting to attend the meeting later of the General Federation in New York.

The policewoman movement was a topic in the division on Corrections under the chairmanship of Katharine Bennet Davis of New York. Speaking on this subject, Mrs. Alice Stebbins Wells, of Los Angeles, the first policewoman in the United States, said:

"It is now conceded by nearly all reasonable people that there is a type of police work which cannot and should not be done by men, and that there is undone in any city which has not policewomen a vast amount of preventive police work in the interest of women and children. During the now nearly six years since Los Angeles appointed the first regular policewoman, twenty states have come into line. Several states which would be in this column if hard work counted were ruled out because the lack of suffrage by woman was construed as prohibiting the giving of police power to women, but the lack of the vote or other prohibitive clauses did not deter in all states, for during these years seven states have passed special legislation to make possible the appointment of policewomen."

INFANT MORTALITY VS. MILK

"There is hardly a community in the whole country which can be said to be more than half-way trying to prevent the waste of infant life."

"No community with an infant mortality rate of over 50 can claim that its babies are getting anything like a square deal." These are the statements made by the New York Milk Committee as result of a survey of the work done and results accomplished during the past ten years in a large number of cities throughout the U. S.

In a bulletin which the Committee has just issued and addressed to the mayors, health officers, editors, citizens and taxpayers, is given the statistical results of its investigation. The Committee's questionaire was sent to the health officers of 252 cities. Infant mortality statistics were obtained for 144 of these. From the remaining 108 either no reliable data could be obtained or the health officers were unwilling to supply the information which the Committee requested. Out of the 144 cities furnishing information, 46 were cities of 100,000 or more population, 32 were cities of 50,000 to 100,000 population, and 66 were cities of 15,000 to 50,000 population, according to the last U. S. census.

Of the cities with a population of 100,000 or more, a baby born in Omaha, Neb., was found to have four times as good a chance to live to celebrate its first anniversary of its birth as a baby born in Nashville, Tenn., or Fall River, Mass. In the cities under 100,000 and over 50,000 population, a Salt Lake City baby has over three times the chance of surviving the first year of life as a Passaic, N. J., or Holyoke, Mass., baby has. While in cities between 25,000 and 50,000 population a La Crosse, Wis., baby has an advantage of more than six to one over a Montgomery, Ala., or Perth Amboy, N. J., baby

Mr. Taylor, the Director of the New York Milk Committee, maintains that it is the community rather than the individual that has power to reflect the ultimate credit on itself and its individuals in baby saving as in everything else. He states, no community can excuse a high infant death rate on the ground that conditions are unfavorable. We now know that conditions which endanger the health and lives of babies can be corrected if only the known preventive measures are applied; it will, of course, cost more to safeguard babies in some communities than other communities, but is not baby saving a duty and the real basis of future City, State and National preparedness?

DONT'S IN THE CASE OF THE BABY

Do not kiss the baby or allow your friends to do so.

Do not give soothing syrups or paregoric.

Do not give proprietary cough medicines.

Do not fail to secure the best milk you can afford to buy.

Do not allow flies to rest on feeding bottle or nipple.

Do not allow the milk bottle to remain uncovered or off the ice.

Do not fail to keep the food on the ice after it is prepared.

Do not feed the baby at irregular intervals.

Do not fail to change the napkin as soon as it is soiled.

Do not fail to protect the baby from flies and mosquitoes by suitable mosquito netting.

Do not give the baby a pacifier.

Do not allow the baby to go one day without a bowel movement.

Do not neglect the care of the mouth.

Do not excite the baby during nor immediately after feeding.

Do not raise the baby without supporting the back.

Do not neglect to powder all folds of the skin.

Do not neglect to keep the ice-box clean and filled with ice.

ANNUAL MEETING OF THE AMERICAN MEDICAL EDITORS' ASSOCIATION

The annual meeting of this Association will meet at the MacAlpine Hotel, New York City, on October 25th and 26th.

A most interesting programme is in course of preparation and the Local Committee composed of the following members is an assurance of a successful convention:

Dr. Thomas L. Stedman, (Editor, Medical Record), Chairman; Dr. R. H. Sayre, (New York Medical Journal); Dr. Brooks H. Wells, (Editor, American Journal of Obstetrics); Dr. Frank C. Lewis, (International Journal of Surgery); Dr. Ira S. Wile, (American Medicine).

The officers of the Association for 1915 and 1916 are as follows:

Dr. Edw'd C. Register, President (Charlotte Medical Journal, Charlotte, N. C.).

Dr. W. A. Jones, 1st Vice-President (Journal Lancet, Minneapolis, Minn.).

Dr. G. M. Piersol, 2nd Vice-President (American Journal Medical Sciences, Philadelphia, Pa.).

Dr. J. McDonald, Jr., Secretary and Treasurer (American Journal of Surgery, New York).

The Executive Committee is composed of the following:

Dr. C. F. Taylor (Medical World, Philadelphia, Pa.).

Dr. John C. MacEvitt (N. Y. State Journal of Medicine, New York).

Dr. A. S. Burdick (American Journal of Clinical Medicine, Chicago, Ills.).

Dr. Joseph MacDonald, Jr. (Americal Journal of Surgery, New York).

The meeting on October 25th and 26th will be devoted exclusively to problems of a strictly journalistic nature, which will be of importance and interest to every editor and publisher of a medical journal. Among the papers to be presented are the following:

"Editorial Control," "The Editor's Prerogative in Editing Original Articles," "Book Reviews in Medical Journals," "Problems of the Subscription Department," "The Relationship Between Medical Journals of the Day," "The Up-Lift in Medical Journalism," "The Influence of the Medical Press and Profession in Public Affairs," "The Rights of an Author in the Disposition of His Contribution." Etc.

PEDIATRICS

ORIGINAL ARTICLES

CEREBROSPINAL MENINGITIS*

With Report of a Sporadic Case

BY BEN F. UNDERWOOD, M.D.
Louisville, Kentucky

Cerebrospinal meningitis has been known by various other designations, e.g., cerebrospinal fever, epidemic meningitis, malignant purpuric fever, petechial fever, spotted fever, etc. It is primarily and essentially an infectious disorder, which may be either acute or chronic, endemic or sporadic; it is characterized by a sudden onset in the majority of instances, with extreme nervous shock, intense pain in neck and spine; spasmodic contractions, headache, opisthotonus, projectile vomiting, elevation of temperature disproportionate to the pulse rate, early delirium, stupor, coma.

As the name implies the infective process involves the cerebral and spinal cord tissues, and is usually due to invasion of the diplococcus intracellularis (meningococcus); although numerous other bacteria have also been isolated from the blood or spinal fluid of patients so afflicted, e.g., the pneumococcus, bacillus typhus, streptococcus, staphyloccocus, bacillus coli communis, etc.

Whether the disease be observed endemically or sporadically, the pathology and symptomatology are practically identical. In cerebrospinal meningitis owing its origin to invasion by the tubercle bacillus, the onset is less abrupt, the symptomatology less severe, and the course more protracted; tubercular lesions are usually demonstrable in other portions of the body, implication of the cerebral and spinal cord tissues being secondary rather than primary in character; tubercular meningitis is almost invariably fatal, whereas in other varieties satisfactory recovery may be reasonably expected in a certain percentage of instances.

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*Presented before the Louisville Medical Club, of Louisville, Kentucky, April 21st, 1916.

Cerebrospinal meningitis has been known for nearly two hundred years, having been accurately described by Pringall in 1752. The first epidemic in this country of which there seems to be any authentic record occurred in Massachusetts in 1806; Canada was visited in 1807; Kentucky, Virginia and Ohio in 1808. The disease raged in Europe from 1814 to 1868; in this country it was especially severe in Pennsylvania from 1863 to 1865; outbreaks occurred in Maryland in 1892, New York in 1893, Massachusetts in 1897. Since then there have been widely distributed epidemics in various portions of North America, and sporadic cases are frequently encountered.

The disease may develop at any time, but for some unknown reason is more often seen during the winter and early spring. It occurs most frequently during childhood and adolescence, being rare in late adult life. Some observers claim the disorder has never been encountered after the age of forty years, a statement which is probably not entitled to unqualified acceptance. There seems no tangible reason why meningitis should not develop at any age, provided the causative factor be actively present in the individual. It has been shown that the meningococcus is not easily destroyed, that its infective qualities may be retained for a long period under the most adverse circumstances, e.g., Jager found that meningeal pus dried upon cotton and kept in Petri dishes for one hundred and twenty-seven days still retained meningococci capable of development.

In practically every case studied, where cerebrospinal meningitis was not of tubercular origin, the meningococcus has been found present either alone or associated with one or more of the other bacteria already mentioned. Febiger punctured the subarachnoid space in ten cases and demonstrated the presence of the organism in every instance; of thirty-five autopsies Councilman found the germ present in thirty-three; Pfoundler detected it in every instance where lumbar puncture was made.

The modus operandi by which the infection is transmitted from one individual to another does not appear to be definitely understood It is reasonable to presume that the bacteria gain entrance to the system through the naso pharyngeal and laryngeal tissues; the tonsil is probably the port of entry in the majority of instances. Some observers claim, however, that infection invariably occurs through the lower gastro-enteric tract. During infancy, in addition to the throat, infection may occur through the ears, the eyes, umbilicus, genitals, etc. The time elapsed between bacterial invasion and development of symptoms is also not accurately known, but is probably only a few days.

The pathological changes produced by invasion of the meningococcus are usually demonstrable in the cerebral and spinal cord tissues. The surface of the dura is tense, reddened and bulging; evidence of inflammation is everywhere present; infiltration into the subarachnoid space is inevitable. The cerebrospinal fluid is markedly increased at first clear, then turbid or cloudy, later becoming purulent; pressure from within causes bulging of the dural surface. All vessels of the pia mater are enormously distended because of the increased amount of the blood present. The infection may extend along the nerve sheaths into the substance of the cord, and abscesses have been noted at necropsy. The lower cavities of the skull, after removal of the brain, have been found filled with purulent fluid. The basal sinuses often contain coagulated blood, and the fluid in the ventricles is turbid or purulent. In the lower section of the spinal canal the fluid may be at first clear, but later is invariably found cloudy or ''milky'' as demonstrated by lumbar puncture.

The principal symptoms have already been mentioned. Since the actual period of incubation is uncertain, no prodromal stage can be positively identified excepting as hereinafter described; headache, chills and malaise may be noted during one or two days preceding the actual onset. The disease usually begins suddenly and is rapid in its progression; severe cervical and lumbar pain, fever (103 degrees to 106 degrees F.), projectile vomiting, delirium, rigidity of neck and spine, convulsions and collapse may follow each other in quick succession; death sometimes occurs within a few hours, even before the diagnosis can be perfected. Purpuric eruptions are frequently noted, from which the designations ''spotted'' and ''purpuric'' fevers have arisen. Vertigo, restlessness, photophobia and abnormal sensitiveness to sound, are usual accompaniments of the severe headache. Cervical rigidity is one of the most constant symptoms, the slightest movement increases pain, and opisthotonus is commonly observed.

Pain and rigidity may extend to the lower spinal area, and so-called "lightning pains" in the legs may occur from peripheral nerve irritation. While retraction of the abdomen is a fairly constant manifestation, as it also occurs in other forms of meningitis its diagnostic value is minimized. This is said to be due to irritation of the vagus, not to contraction of the abdominal muscles. Persistent coprostasis is the rule, due to tonic contraction of the intestinal musculature; diarrhea is rarely present at any stage of the disease. Hyperesthesia involving the skin and muscles of the lower extremities has been noted. In addition to rigidity of the neck and spine, tremors and spasms of the muscles of the arms, legs and face may be noted. Dysphagia, diplopia, strabismus and trismus are not uncommon. Kernig's sign is usually present. Delirium is sometimes an early symptom, and may be followed by stupor or coma In the absence of definite delirium there may be insomnia, irritability, restlessness, excitability, mental confusion. The temperature may reach 106 degrees or even 108 degrees F. before death closes the scene. The pulse rate is entirely disproportionate to the temperature rise; respirations as a rule vary but slightly from the normal ratio. Cutaneous manifestations are inconstant, although roseola, scarlatina, erysipelatous, urticarial and erythematous eruptions have been observed. Herpes constitutes an important diagnostic sign, being almost invariably present upon the lips, cheeks, nose etc, during the first few days of the attack. The quantity of urine is generally increased; albumin and sugar are sometimes found.

The complications and sequelæ are deserving of especial mention because of their gravity and relative frequency. There may be complete loss of smell, taste, and hearing. According to Moos, of sixty-four patients recovering from cerebrospinal meningitis, deafness was present in thirty-five. Keratitis and panophthalmitis may occur from extension of the infection along the optic nerve sheath, with consequent partial or complete blindness. Of forty cases examined by one observer (Randall) the fundus was found normal in only seven. Serous and purulent effusions into the knee, ankle and wrist joints have been reported. Pneumonia may be either a cause, complication or sequel, probably most often the latter. Pulmonary congestion and edema are common. Anemia, emaciation and exhaustion are logical results. Headache may persist for years after recovery; as a rule deafness and blindness are permanent; loss of speech and memory, hemiplegia, paraplegia, etc., may later disappear. The liver and kidneys usually undergo parenchymatous degeneration; the spleen is sometimes enlarged; endo- and pericarditis are possible complications or sequelæ.

Little need be said further concerning the diagnosis which at best may be uncertain until lumbar puncture has been made and the withdrawn cerebrospinal fluid bacteriologically examined. Any acute infectious disease with pronounced cerebrospinal symptoms may so closely simulate cerebrospinal meningitis that a clinical differentiation is impossible without the aid of the bacteriologist. The characteristics of tubercular meningitis have already been outlined. Lichtheim never failed to find tubercle bacilli in cases of tubercular meningitis examined in his clinic where lumbar puncture was made. "The purulent forms (of meningitis), due to infection by the streptococcus or pneumococcus, are said to be characterized by greater severity of the cerebral symptoms (delirium and coma) and by a less extreme rigidity of the neck." (Leichtenstern) It is stated that where the streptococcus has been demonstrated as the responsible causative factor, the disease has invariably proved fatal. Spinal puncture for diagnostic purposes should be made between the third and fourth lumbar vertebræ; the procedure is practically harmless, and examination of the fluid will positively determine the diagnosis. It seems needless to state that all such examinations should be made by those thoroughly competent in laboratory technical methods, otherwise information thereby afforded will be without diagnostic value.

According to some of the latest conceptions (Lundie, Thomas, Fleming) cerebrospinal meningitis is more prevalent than generally known, and is represented by three stages: (a) the "catarrhal," (b) the septicemic, and (c) the meningeal.

The first stage is characterized by the presence of pharyngitis, either alone or in conjunction with laryngitis; there are no constitutional symptoms, and the only objective sign may be a simple redness of the pharynx; bacteriological examination of the secretion shows the presence of meningococci, and these are regarded as responsible for the pharyngitis for the following reasons: The meningococcus resembles the diplococcus of Neisser in having great vitality in a favorable nidus;

the organism has a tendency to enter wandering cells and eventually to travel into the blood stream where it may cause no clinical manifestations other than a toxic headache, which is usually attributed to influenza. The disease may remain local and extend over a greater area including the larynx; instead of the living cells entering the blood stream there may be produced a perimucosal induration causing considerable tenderness and difficulty in deglutition; the symptoms are aggravated by the association of other organisms such as the streptococcus maximus; the meningococcus (like the diplococcus of Neisser) has a tendency to enter the leucocytes which protect it from the action of the antibodies. Considerable importance is attached to the early recognition of the "catarrhal" stage of meningitis, for only by this means can one gauge the extent of an epidemic.

The second or septicemic stage is generally not diagnosed. The palate is red, spotted, and covered with minute vesicles; the pharynx is inflamed; the voice is often husky, and a dry, harsh cough may be present; there may also be a profuse nasal discharge; herpes labialis is common; the temperature is elevated, the face flushed, the conjunctivæ injected; there is some degree of mental confusion, and the reflexes are greatly exaggerated. During this stage meningococci are probably present in the blood; they have been isolated from the urine and from the cerebrospinal fluid.

The third or meningeal stage supervenes after varying intervals, and is the stage which presents the clinical picture generally recognized as meningitis. The fact is emphasized that at this stage the disease is already far advanced, and in a large percentage of cases fatal. The diagnosis during the "catarrhal" stage enables one to prosecute an efficient treatment by "spraying the throat and the administration of autogenous vaccines."

As in the majority of the other diseases which afflict the genus homo, the greatest interest attaches to the prognosis and treatment. The mortality from cerebrospinal meningitis under the older methods of treatment was frightful, the average being about eighty per cent. In later epidemics, however, considerable reduction in the mortality was secured by earlier recognition, accuracy in diagnosis, and prompt institution of remedial measures. It is difficult to prognosticate what may be the final outcome in any case, whether the variety be endemic or sporadic, since a fatal exacerbation may never occur in what seems a mild attack, while, on the contrary, the seemingly most malignant or fulminating attack may be followed by satisfactory recovery. Symptoms of marked depression, coma, stupor, convulsions, obstinate projectile vomiting, high fever, are important danger signals; and death may result from inanition if the attack be unduly protracted. It has been claimed that about one half the fatalities from cerebrospinal meningitis occur before the sixth day. If this observation be correct it emphasizes the importance of early diagnosis and the prompt institution of appropriate remedial measures; in no other way can a material reduction in mortality be effected.

The treatment consists of lumbar punctures and withdrawal of some of the cerebrospinal fluid intraspinous introduction of antimeningitis in proper dosage. This should be repeated daily for three or four days if the attack be of average severity; in the so called fulminating type it may be advisable to make two injections of the maximum dose within the first twenty-four hours; sometimes four such injections within forty-eight hours have been required to produce the desired results. The serum should be injected slowly, preferably by gravitation at a temperature of approximately 100 degrees F. Puncture may be made between the second and third or the third and fourth lumbar vertebræ. The frequency of administration and dosage will depend largely upon the condition of the patient and the effect thereby produced. "It is imperative to control the injections by observations on the appearance of the cerebrospinal fluid, and particularly whether it becomes clearer day by day, and the meningococci grow less and less, and disappear altogether." (Donnell.)

Under the serum treatment in competent hands the mortality of cerebrospinal meningitis should not be greater than twenty per cent. It is believed that even more favorable results may be secured by using larger doses of serum than hitherto recommended. It has been demonstrated that withdrawal by lumbar puncture of a considerable quantity of the cerebrospinal fluid is unproductive of harm, and as pressure is increased by the presence of a greater amount of fluid than normal, the amount injected should always be slightly less than that withdrawn; e.g., if 40 c.c. of the cerebrospinal fluid be removed, approximately 30 c.c. serum should be introduced.

The general treatment is that applicable to other infectious disorders. Absolute quietude should be enjoyed and comfort of the patient assured by the exhibition of suitable external and internal remedies. Free alvine evacuation and diaphoresis should be early induced. Camphorated oil, caffein and atropine hypodermically at frequent intervals, and sodium bromide internally, are of value in promoting physical and mental comfort. Opiates should be used with extreme caution. Ice bags applied to the cervical region are useful when the pain is severe during the early stages; cold baths and cold sponging are inadvisable since they require moving the patient, thus aggravating the already existing discomfort.

This paper would be incomplete without further reference to the vaccine treatment of cerebrospinal meningitis. During the last year (1915) numerous observers have been diligently investigating this question, but there is yet no consensus of opinion concerning the merits or demerits of the vaccine treatment. Theoretically the administration of autogenous vaccine would appear the ideal method of combating the deleterious influences exerted by the meningococcus as well as other bacteria whether circulating in the body fluids or occupying localized situations within the human economy; but practically the method seems to have been only partially successful. It appears improbable that any medicament introduced subcutaneously can reach the cerebrospinal fluid in sufficient concentration to be effective in destroying bacteria located therein; and because of the circuitous route by which the blood reaches the meninges, and the impossibility of preventing tremendous dilution of the medicament, the same suggestion will apply in slightly lesser degree to the intravenous method of administration.

The following personally observed case appears sufficiently interesting to warrant detailed report, especially from the fact that the patient is now practically out of danger.

W., male, white, aged fifteen years. Date of first observation, April 7th, 1916. The patient is a rather tall, slender lad, apparently very nervous in disposition. Family history: father, mother and two sisters living and in fair health; one brother died of tetanus; and one sister dead, cause unknown. Personal history: scarlet fever, pertussis, measles, several attacks of tonsilitis; the slightest fever always caused delirium.

Present illness began at noon on April 6th, with severe chill, propulsive vomiting, patient very restless during the night. At 8:30 a. m., April 7th, axillary temperature 103.2^0 F., pulse 80, respirations 26; constipation marked, severe headache, slight delirium. Physical examination: lungs, normal; heart, soft systolic mitral murmur; ears and eyes normal, throat congested, tonsils enlarged and congested; abdomen retracted; Kernig's sign not present; no rigidity of neck; urine negative.

At 5:30 p. m. April 7th temperature 100.4^0 F., pulse 72, respirations 24. Slight rigidity of neck; abdomen retracted; Kernig's sign not present; bowels had acted freely. At 3:00 a. m. April 8th temperature 102.4^0 F., pulse 72, respirations 24. Kernig's sign present; marked rigidity of neck; retraction of abdomen; severe occipital headache; slight backache. Diagnosis, cerebrospinal meningitis. April 8th at 8:45 p. m. temperature 98^0 F., pulse 60. respirations 22.

On account of the city health department being unable to furnish antimeningitic serum, the patient was sent to the Louisville Public Hospital. At 11:00 a. m., after entering the hospital, temperature 97^0 F., pulse 58, respirations 22. Lumbar puncture: 40 c.c. cloudy cerebrospinal fluid withdrawn, and 30 c.c. antimenengitic serum given. At 5:00 p. m. rectal temperature 104^0 F., pulse 68, respirations 32. Sodium bromide grains xxx every three hours until three doses had been given.

April 9th at 8:00 a. m., temperature 100.6^0 F., pulse 74, respirations 24. 40 c.c. cloudy cerebrospinal fluid withdrawn and 30 c.c. serum injected. At 5:30 p. m. temperature 103^0 F., pulse 72 respirations 24.

April 10th 8:00 a. m., temperature 100^0 F., pulse 78, respirations 24. 35 c.c. cerebrospinal fluid withdrawn, and 30 c.c. serum introduced. Camphorated oil m.x., caffein citrate gr. i, atropine gr. 1-100 given every three hours.

April 11th 8:00 a. m., temperature 102^0 F., pulse 72, respirations 28. At 5:30 p. m., temperature 101^0 F., pulse 106, respirations 28. 20 c.c. cloudy cerebrospinal fluid withdrawn, and 15 c.c. serum injected.

April 12th, temperature 99.8^0 to 100.2^0 F., pulse 80 to 88, respirations 22 to 24. 25 c.c. cerebrospinal fluid withdrawn, and 15 c.c. serum given. The following table shows the pulse and temperature ranges during the succeeding nine days:

Date	Temperature	Pulse	Respiration
April 13th	98.4° to 101° F.	96 to 80	22 to 24
April 14th	100.2° to 99° F.	88 to 96	22 to 24
April 15th	99° to 100° F.	88 to 98	24 to 26
April 16th	98.4° to 99° F.	72 to 88	22 to 24
April 17th	98.2° to 99.8° F.	72 to 90	22 to 24
April 18th	98.4° to 99.4° F.	72 to 88	22 to 24
April 19th	98.2° to 99.2° F.	78 to 88	22 to 24
April 20th	99° to 100° F.	72 to 100	22 to 24
April 21st	98.4° to 100° F.	78 to 90	22 to 24

Liquid paraffine one ounce given b. i. d.; nux vomica m. vi, t. i. d.

On April 8th examination of the cerebrospinal fluid showed the presence of gram-negative, biscuit shaped diplococci; cultures and smear positive for the meningococcus. On Aprfil 15th no diplococci found.

I saw the patient today (April 21st) and he is convalescent. A small quantity of the cerebrospinal fluid withdrawn this date was perfectly clear. The only sympton he now has is a slight rigidity of the muscles of the head, and I believe he will make a satisfactory recovery. According to the majority of observers about one-half of the patients perishing from cerebrospinal meningitis succumb before the sixth day.

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SUBACUTE ANTERIOR POLIOMYELITIS*

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and
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Although considerable doubt has been expressed as to the existence of subacute and chronic anterior poliomyelitis as separate and distinct from progressive muscular atrophy, the case which is shortly to be described in this paper appears to us to fall definitely into the former class.

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*Glasgw Medical Journal.

The patient, an elderly woman, who came of good country stock, and had previously enjoyed fairly good health and worked hard as a nursemaid, presented a flaccid paralysis beginning in the peroneal group, extending rapidly to the upper extremities, and finally involving the muscles of respiration. The paralysis appeared first, and later atrophy of the affected muscles became marked. No fibrillary tremors were observed. Repeated and thorough examinations showed that there were no disturbances of sensation beyond occasional shooting pains. The sphincters were not affected. The reflexes were early abolished. An examination of the electrical reactions on admission showed reaction of degeneration fully developed in the affected muscles of the left leg and incomplete in the right leg. The Wassermann reaction was unfortunately not ascertained, but there was no history or suggestion of syphilis. The patient died from involvement of the diaphragm and intercostal muscles, the duration of the illness being probably less than a year.

Clinically, the diagnosis lay between peripheral neuritis and anterior poliomyelitis. The paralysis was quite in keeping with either diagnosis, but there was no disturbance of sensation, nor tenderness of the nerve trunks. Later, the somewhat selective nature of the palsy, and the marked atrophy, pointed to a diagnosis of anterior poliomyelitis. As will be seen from the pathological report, this diagnosis was confirmed and the nerves showed no pathological change.

Probably the case may be classified as one of subacute or chronic anterior poliomyelitis. The separation of these cases from progressive muscular atrophy is largely artificial, and is difficult to maintain on the strength of histological evidence. According to Oppenheim, such cases are rare, but undoubtedly exist. He states that they can be sharply differentiated from multiple neuritis in that the motor apparatus is exclusively involved. Batten and Holmes do not agree with Oppenheim's distinction of poliomyelitis chronica as a separate disease. Stanley Barnes has described cases of "toxic degeneration of the lower neurones," which resemble multiple neuritis, but are associated with marked atrophy of the hand muscles, and with but slight sensory symptoms. In some respects the condition resembles that of progressive atrophy, but the etiology is different, and there is a constant tendency to improvement. In one case changes were found both in the peripheral nerves of the arms and in the nerve cells of the spinal anterior horns. The present case is quite different. There was no evident toxæmia, no sensory disturbances, and no changes in the nerves. Gowers states that cases are met with, although not frequently, that present every gradation to subacute poliomyelitis in one direction, and perhaps also to polyneuritis in another. Chronic and subacute poliomyelitis is, according to Harris, also a rare but undoubted sequel of syphilis. In Harris' three cases complete or partial Argyll-Robertson pupil was present in each. He states that the disease is a very late sequel and that excess of albumen and lymphocytes in the cerebrospinal fluid is absent in this form of spinal syphilis. It is greatly to be regretted that the blood was not examined for the Wasserman reaction in this case. However, the patient's personal and family histories were in no way suggestive of syphilis.

Thus, clinically, the case was unlike the usual form of progressive muscular atrophy in its mode of onset, in the distribution of the paralysis, in fact that paralysis appeared first, and was much more evident than atrophy, in the absence of fibrillary tremors, and in the rapid progress to a fatal issue.

From the pathological viewpoint the principal features of the case were the advanced degenerative changes in the ganglion cells of the grey matter of the spinal cord, and to a less degree in the medulla and pons, and the absence of tract degenerations and peripheral neuritis.

History of Case.—The patient, a nursemaid, aged 48 years, was admitted to the Glasgow Royal Infirmary on 12th January, 1915, complaining of soreness and stiffness of the back, and partial loss of power of the legs and arms.

In April and May, 1914, the patient began to experience pain in the back on exertion, especially on going upstairs. Atfer a complete rest, she became quite well. Weakness in the legs came on gradually. The left leg was worse than the right and dragged when she walked. About August, 1914, she felt when walking a sharp pain shooting down the back of the right leg. This continued until she rested. Occasionally she had a momentary sensation of numbness in the arms and hands. She had difficulty in putting up her hair. Otherwise she could use the arms and hands well, and could knit and sew. She has been unable to follow her employment since about August, 1914. But for an attack of bronchitis, for which she was treated in the Royal Infirmary, her previous health had been good. The family history presented nothing of importance.

Condition on Admission.—The patient was a fairly tall woman of moderate muscular development. She lay comfortably in bed and made no complaint. The pupils were equal and reacted normally. The grip of both hands was fairly good, but the left was probably stronger than the right. There was a considerable weakness of both legs, apparently mostly of the extensors. The left leg was much weaker than the right. There was but a moderate amount of flexion of the left knee-joint, and this was easily resisted. Dorsiflexion of the left foot was slight, and was accompanied by inversion, there being marked drop-foot. Much more power was present in the right leg, but here also there was some drop-foot and weakness of the extensors. There was no evident atrophy. The flexors and glutei appeared to be normal. There was some weakness of the erector spinæ. Patient could not put up her hair owing to weakness of the deltoids. Otherwise the movements of the arms and shoulders were good. The knee-jerks, triceps-jerks, and supinator-jerks were present and equal. The ankle-jerks and plantar reflexes could not be elicited. The jaw-jerk and abdominal reflexes were absent. The sphincters acted normally. No sensitory disturbance could be discovered. No tenderness or deformity of the spine was present. An x-ray photograph showed no abnormality.

Under treatment the patient appeared to improve for a short time, but then began to go steadily downhill. By 20th February there was distinctly less power in the legs and some atrophy was apparent. Sensation was perfect. She had lost weight considerably. Early in March very little power remained in the left leg, and the right was also very weak. There was much weakness of the back. No sensory disturbance could be detected beyond occasional pains in the back of the right leg. By the end of March weakness in the arms was more marked.

Note on 9th April.—Both arms were weak and the muscles were small and flabby. Atrophy of the thenar and hypothenar muscles was distinct. There were no fibrillary tremors. The right grip was slightly greater than the left, but both were weak. Weakness was most marked in the extensors, and the left wrist dropped slightly. There was marked weakness and atrophy of the deltoids, but no definite weakness of the shoulder girdle muscles. The triceps tendon and supinator jerks were very slight, if present at all, and were equal on both sides. The right knee-jerk was slight but distinct. The right plantar reflex was now present and flexor. No reflexes could be elicited on the left. The diaphragm was acting. There was marked weakness of the back, and patient could not sit up. There was no sensory disturbance beyond occasional pains in the right leg. The pupils were equal and responded normally. There was no disturbance of the general health. The tongue was clean and moist, and the appetite and bowels satisfactory.

By 26th April the patient's condition had rapidly deteriorated. The condition of the legs was much the same, but the arms were weaker. Atrophy of the thenar and hypothenar muscles and of the deltoid, supraspinati, and infraspinati was marked. On the evening of the 25th she complained of shortness of breath, and had to be propped up in bed. Next morning she was rather better. Nothing could be discovered in the chest, the diaphragm was acting, and the larynx appeared to be normal. On 28th April the diaphragm was not in full action, and on the 29th it was inactive. There was no laryngeal or palatal paralysis. On 29th April the intercostal muscles were involved, and death ensued rapidly.

Summry of Report of Post-mortem Examination.—There was marked atrophy of the muscles, which was most evident in the thenar eminences and the calves of the legs. The left leg was more atrophied that the right. The thoracic and abdominal viscera showed no deviation from the normal except some old fibrous adhesions on the left lung and about the appendix, and some small myomata in the uterus.

Nervous System.—The pia arachnoid was very highly œdematous and a large amount of fluid welled up from the spinal canal; it was perfectly clear. There were a few small superficial hæmorrhages on the surface of the cerebrum, probably terminal; otherwise it showed no sign of disease. The cranial nerve roots, the spinal cord, and spinal nerve roots appeared normal. All the peripheral nerves which were examined stripped cleanly from the adipose tissue, showing no sign of neuritis. Portions of the brain, spinal cord, spinal ganglia, and the vagus, phrenic, great sciatic, anterior tibal, and musculo-spiral nerves, from both sides, were preserved in formalin for microscopic examination.

Microscopic Examination.—The material was obtained within five hours of the death of the patient.

Celloidin sections were prepared from tissues treated by Marchi's method, and paraffin sections were stained with hæmalum and eosin and toluidin blue for Nissl's bodies.

Spinal Cord.—There was no reaction by Marchi's method. Paraffin sections of the dorsal and cervical regions were examined. As the sections contained a few cells which appeared to have been absolutely healthy, a standard by which the histological preservation of the cord could be estimated was obtainable. All degrees of changes were seen in the cells of the grey matter from a slight chromatolysis, with or without pigmentation, down to a condition of absolute lysis with atrophy of the processes and eccentricity or extrusion of the nucleus. In some instances there was necrosis of the cells, merely a diffusely stained shadow of the cell remaining. As a rule, there was no increase in the number of satellite cells around the nerve cells. The cells of the anterior horn were more affected than those of the posterior horn or Clarke's column. There was none of the cellular infiltration about the vessels which is seen in acute anterior poliomyelitis. The horns of grey matter showed no gross atrophy.

In the medulla the ganglion cells presented all degrees of change. The best preserved were those of the groups situated near the opening out central canal—probably those of the nucelus of the twelfth nerve. All the other groups showed much variation in the condition of the cells; but, on the whole, there was considerably less change than in the cells of the cord. The cells of the olivary nucleus showed very marked chromatolysis and pigmentation and satellite cells not uncommonly, but the advanced changes seen in the cord were not made out. The condition of the pons was similar to that of the medulla.

Sections of three of the posterior root ganglia were examined. In two the chromatolysis was not very marked, the cells showing abundant granules but usually some central lysis. In the third the lysis was distinctly more marked, and there was more brown pigment in the cells. There was not, however, complete lysis such as was seen in the anterior horns of the spinal cord.

Optic Thalamus.—The cells in this generally showed chromatolysis, many of them to an advanced degree, and many of them were also accompanied by round cells in some excess, apparently set into the body of the ganglion cell. Processes were difficult to trace. Necrosis was not made out.

Cerebrum.—The sections were prepared from the motor cortex. There was chromatolysis in most cells. The Nissl bodies in some seemed to have been to a great extent discharged. In most the staining was fairly deep but it was diffuse, the distinctness of the bodies being lost. A few showed fairly good Nissl body staining, but a strictly normal cell for a standard could not be found. There were satellite cells about a certain number of the nerve cells, and some of these were imbedded in the bodies of the cells. The processes generally seemed to be well preserved. The complete lysis and the other graver changes seen in the spinal cord were, however, entirely absent. The changes may have been recent—a condition which would correspond to the good mental condition up to the end.

Altogether the brain showed much less pathological change than the spinal cord.

Nerves.—There was much adipose tissue in the nerves. V. Gieson's stain showed possibly a slight excess of connective tissue among the nerve fibres and slight thickening of the sheaths of the nerve cords. The fibres themselves looked healthy. Marchi's method showed no degeneration, the nerve fibres appearing perfectly healthy.

Summary.—1. The patient, a woman of 48 years, exhibited a flaccid paralysis beginning in the peroneal group of muscles, rapidly extending to the upper extremities, and finally involving the muscles of respiration.

2. The paralysis preceded the atrophy. Reaction of degeneration was present, but there were no fibrillary tremors.

3. There was no disturbance of sensation beyond occasional shooting pains in the right leg.

4. The duration of the illness was less than one year.

5. The diagnosis was indicated by the somewhat selective nature of the palsy, by the distinct atrophy which followed and by the complete absence of sensory disturbance.

Pathological Summary.—There was no microscopic evidence of disease of the nervous system except œdema of the pia arachnoid and an excess of cebrospinal fluid. Microscopic examination revealed degenerative changes in the cells of the grey matter, which were very advanced in the spinal cord, less advanced in the medulla and pons, and slight in the basal ganglia and brain. In the cord many cells were barely recognisable, and probably others had disappeared altogether. There were some satellite cells in places, but no inflammatory infiltration such as is seen in acute anterior poliomyelitis. Also there was no peripheral neuritis and no degeneration of tracts.

Conclusion.—Clinically the case could be definitely distinguished from progressive muscular atrophy and peripheral neuritis. Pathologically there was degeneration of the lower motor neurones. The case probably should be regarded as a sub-acute poliomyelitis.

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EUGENICS VERSUS HEREDITY*

BY CASPER L. REDFIELD

The first thing I wish to call to your attention is the distinction between the foot-pound and the cubic foot. The foot-pound is used to measure work, and when work is stored it is called energy. The cubic foot is used to measure material substances, or the space in which bodies are contained. What I have to say relates to things measured by the foot-pound, or corresponding unit, and not to things measured by the cubic foot.

If a man is sick he does not hire his doctor by the cubic foot. He hires him for the foot-pounds of intelligence he has. Not that we are in the habit of measuring intelligence by the foot-pound, but what I wish to direct your attention to is the fact that intelligence belongs in that class of things measured by the foot-pound and not in that class of things measured by the cubic foot.

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*Extracts from an address delivered April 12, 1916, before the Zoological Department of the University of Chicago.

The verb "to acquire" means to obtain by effort, by the performance of work; and work is measured in foot-pounds. If a man goes into a gymnasium he acquires strength by the exercise he takes, and the amount he acquires is measured by the foot-pounds of work he does. He will acquire more strength (muscular energy) by doing a million foot-pounds of work than by doing a thousand foot-pounds. Acquirements are also measured by time. A man who exercises regularly will acquire more dynamic development in a month than in a week, more in a year than in a month, and so on.

If an offspring is to inherit an acquirement made by the parent, the parent must make the acquirement first and get the offspring afterwards: not get the offspring first and make the acquirements afterwards. Among animals which work regularly, the greatest acquirement exists in later life, hence, if acquirements are inherited, the better progeny should come from the older parents. On the other hand, if the better offspring do come from the older parents, that fact would mean the inheritance of acquirements, and mean nothing else. The reason is that age of parents represent time, and time is a factor in the measurement of work performed, and not a factor in the measurement of anything else.

It is commonly said that Weismann knocked out the doctrine of inheritance of acquirements and Lamarck's theory at the same time. Weismann did nothing of the kind, either directly or indirectly. He attacked Lamarck on the inheritance of mutilations, but if he had known anything whatever of the subject about which he pretended to give information he would have known that the assumed inheritance of mutilations had nothing to do with Lamarck's theory. He also would have known that Lamarck had distinctly stated that mutilations were not inherited.

We are told that Lamarck's theory is that the offspring inherit the effects of the action of the environment upon the parent. It is nothing of the kind. Lamarck took particular pains to caution his readers against putting such an interpretation upon anything he said.

Your text books tell you that Lamarck's theory is "a species forming theory." It is nothing of the kind. Lamarck says species are an artificial classification by man for convenience, but that they have no existence in nature and have nothing to do with his theory. Lamarck's theory is a theory of the evolution of structural types by the action of habits formed in the struggle for existence, the kind of struggle being determined by the environment. Thus, animals living in water will struggle in certain ways; animals living in trees will struggle in other ways; animals living in the ground will struggle in still other ways; and so on. (See Packard's Translations.)

I am telling you these things for the purpose of pointing out to you that the doctrine which denies the inheritance of acquirements is based on an amazing amount of misinformation. It is also based on a total lack of scientific investigation of the subject. Acquirements are obtained by work, and work is measured in foot-pounds or some units convertible into foot-pounds. No investigation of this subject can have scientific merit unless it makes some attempt to measure acquirements quantitatively and compare such measurements with subsequently produced offspring.

A parent cannot transmit what he does not have. If he can transmit no more than he inherited, how can there be an evolution of animal powers, either mental or physical? Perhaps you think that such an increase might come by mutation or advantageous variation. But stop a moment to think what that means. A child is born with something it did not inherit from its parents! That would mean that special creation had taken place somewhere in connection with the reproductive process.

But some persons say that there has been no evolution of mental power, and they point to the men of ancient Greece as being equal to anything which has since existed. I might dispute that claim, but there is a better answer. We are not descended from Aristotle, Plato, Socrates, et al. Our ancestors were savages two or three thousand years ago. The fact that there were great men in ancient Greece is not evidence that we are no improvement over the savages from whom we are descended.

But it is even said that we are not inherently superior to those savages, and that the apparent superiority comes from education and accumulated information sometimes designated as social heredity. But how about another three thousand years, ten thousand years, a hundred thousand years, and so on back? If you deny all evolution of mental and physical powers, then you return immediately to the Garden of Eden story with each kind of animal originally created equal to anything which has since existed. If you attempt to dodge the Garden of Eden story, then you admit that a parent may transmit more than he inherited. That "more" must be something acquired, or it must be some special creation associated with reproduction. Something from nothing is just as wonderful at one place as another. The issue is not dodged by removing special creation from the Garden of Eden to the germ and dividing it into small fractions so as to spread it over many generations.

If you wind up a spring you store work in it. You can get out as much work as you put in, and that work may be used to drive a clock, pump water, compress air, or do any one of many other things. If used to pump water the energy (stored work) is taken out of the spring and stored in the water. It may be then taken out of the water and stored in some other place, and so on in endless succession. There are laws relating to energy, which laws govern it in all of its transformations. But the energy which went into that spring came out of your muscles and you may be certain that those laws concerned that energy while it was in your muscles and on its way to and from that place.

You may concede that fact, yet think that human intelligence stands on a different footing. A mathematical calculation performed by either the human intelligence of a calculating machine is the same thing, and things which are equal to the same thing are equal to each other. The energy employed to drive the calculating machine is measured in foot-pounds, and the difference between the energy going through the machine and that going through the brain is a difference in the efficiency of the apparatus and not a difference in the essence of the energy involved.

Energy is transformed into many forms, yet it is always the same energy, and is always measurable in foot-pounds or some units that may be transformed into foot-pounds. Heat, light, electricity, physical strength and human intelligence are different species of the genus energy. There are specific laws for each species, and generic laws for the genus. What I am driving at is to point out to you that the evolution of physical strength and human intelligence is and must be in accordance with certain generic laws which are definite and precise things in science.

The first of these laws is to the effect that you can't get something out of nothing. If, in the process of evolution from monad to man, we get successive generations of animals having greater and greater physical and mental power, the energy involved must necessarily have had a source. That source can only be some existing form of energy. One trouble with the biological teachings of the present day is that it assumes conditions which involve a contradiction of this fundamental law known to science as the Conservation of Energy.

The second law relates to the behaviour of energy and the only possible conditions under which it may be conveyed from its source to an available condition in man or mechanics. This law says that energy left to itself always dissipates and can be raised to an available condition only by the performance of work. This means that if there has been an evolution of mental and physical powers at any time in the past, that evolution was necessarily the product of the work performed. Unless you are prepared to denounce as unsound the fundamental law of another science, this is a conclusion you must accept. This second law is known to science as the Dissipation of Energy, and a large amount of the scientific progress during the past half century is based on a recognition of the soundness of this law.

The eugenists are telling us that the superior part of the population is producing an average of about a child and a half to the family, while the inferior part is producing some six or eight children to the family. That is a partial truth which may be a new discovery to the eugenists, but it is not a new phenomenon in the history of man. The same thing existed fifty and a hundred years ago. Five hundred and a thousand years ago. It existed in ancient Greece, and there are indications that it existed in China at the time of Confucius.

The eugenists tell us that from the feeble-minded we get only feeble-minded, but if we are not all descended from feeble-minded ancestors, then evolution is false. Evolution tells us that we are descended from a common ancestor with the ape, and we cannot assume that common ancestor to have been mentally superior to those members of our community whom we now designate as feeble-minded. Go back only twenty generations (about 600 years), and each one of us has more than a million ancestors taken from the common stock. In a population of a million there are many feeble-minded persons. But on the test of family size, we can find them much nearer. None of us can go back far in our pedigree without coming to large families. Under the Binet test, our eugenists would condemn their own ancestors as unfit to reproduce, and they would find those "unfit" ancestors much nearer than most of us suppose.

There is and always has been improvement in power capabilities from generation to generation. The most clearly defined and best recorded cases is the American trotter which was developed from the three minute trotter to the two minute trotter in a hundred years. I have published full details of the process by which this improvement has been brought about, yet those who deny the inheritance of acquirements have deliberately shut their eyes to this definite and positive edidence, and have gone on repeating their unfounded statements.

But you need not take the evidence I have collected. You can see the same thing from the animals with which you deal. Acquirements are obtained by the performance of work . With that in mind it can be seen that the amount of work performed per generation before reproducing by the different kinds of animals is an accurate representation of their advancement in power capabilities. This is true for all kinds of animals but is most easily seen in the higher animals. Man is intellectually superior to other animals simply and solely because he is mentally active more hours a day for more years before reproducing than any other animal. Increase the amount of work per generation and the race will advance. Decrease it and the race will degenerate.

DIET OF THE SCHOOL CHILD*

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The proper feeding of the child of school age presents one of the most difficult and at the same time most important of all the problems of human nutrition. In feeding infants the specialist gives a food that provides for the growth and development alone, as that is practically all a baby requires. A great deal of work has been done in infant feeding and much progress has been made in this particular branch of dietetics. In feeding the adult the dietician provides a very different food from that intended for the baby, because you must give a food that supplies energy chiefly for work, as an adult needs nothing for growth and development. When we come to consider feeding a child of school age we find that we must provide a food that takes care of growth and development on the one hand, and supplies material for work on the other. In other words, the school child occupies a middle ground between the infant and the adult, and in its life activity partakes of the functions of both, for it must grow, and it must work. The world's greatest scientists have devoted years of study and research to infant feeding, and leading works on dietetics show abundant work in the feeding of adults, but one is surprised to find how little has been done in regard to the feeding of a child.

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*Read before the Tri-State Medical Association of Mississippi, Arkansas and Tennessee, Nov. 16, 17, 18, 1915.—Memphis Med. Jour.

It is a well established fact that the feeding of a child has a direct effect upon its mental activity. If a child is fed wholesome, nutritious food it can do first-class brain work, whereas, if its digestive functions are impaired by improper food, or if it does not receive sufficient food, or if the food is not properly prepared, then its mental activity lags. It is well to bear in mind the important fact that food is not to be regarded as a means of satisfying the palate alone, but must be looked upon as intimately connected with health and efficiency. In order to provide food for a child properly a knowledge of dietetics is necessary, and the proper proportion of the various foods needed to keep a child in first-class physical and mental condition must be understood and appreciated.

The consumption of food serves two purposes:

First, it builds up and repairs the body.

Second, it provides energy for work, heat and the vital processes.

For growth and development, nitrogenous material is necessary, while fat, starches and sugar are required to provide energy needed for work and the vital processes.

In providing a dietary for a child the dietician takes into careful consideration the proportion of carbohydrate, protein, fat, mineral matter and water making up the daily food supuly, and he so balances these ingredients as to give the child a food that will provide for his growth on the one hand and supply him with energy for work and play on the other.

Meat, eggs and milk contain large quantities of nitrogenous material, and therefore serve the purpose of building up the body tissues and repairing waste cells.

Bread, cereals, sugar, potatoes, etc., supply energy and give a child strength with which to work and play.

Butter, cream and other fats, serve a useful purpose, in that they aid in repair, produce heat and promote growth.

Oranges, celery, fresh vegetables and watery fruit contain little fat, protein and carbohydrates, but supply much water to the system.

Roughly speaking, a child's diet should then be made up of milk, eggs, cereals, bread, butter, meat, fish, vegetables and fruit.

Milk is a whole food and contains all the ingredients necessary to sustain life. It should be given to all children whenever possible. A child should take it two or three times a day. It may be given as sweet milk, buttermilk, cocoa, milk soup and milk toast.

Cereals should form a very important part of the child's dietary and every child should take them liberally. Always give cereals that are prepared at home, such as rice, oatmeal, cream of wheat and grits.

The preparation of cereals is an important matter, and it must be borne in mind that if not properly prepared they can do much harm. Rice and oatmeal should be boiled four hours. For this purpose a double or fireless cooker may be used. They can be prepared the afternoon before or overnight. The reason for long boiling lies in the fact that each grain is enveloped in a cellulose cell, and it takes considerable boiling to break the envelope and free the starch.

Eggs are rich in protein and are best given soft boiled, poached or scrambled. A child should have one or two a day.

Butter represents one of the chief forms of fat and should always be fresh, pure and of the best quality. It is best given on bread several times a day. It is well to bear in mind that fat remains longer in the stomach than any other food and readily causes symptoms of indigestion.

Cream is another source of fat and is best given with milk on cereals and it must be given cautiously.

Meat is the chief source of protein and, as a rule, should be given at midday, although in older children it can be given at night, but it is likely to produce sleeplessness and restlessness. The best meats for children are chicken, lamb and beef. The latter should be given rare. Fresh fish is very desirable, easily digested and is best given baked, broiled or stewed.

Vegetables, fresh vegetables, such as spinach, lettuce, fresh tomatoes, Irish potatoes (baked, boiled, or mashed), carrots, asparagus, peas, beans, cauliflower and celery are well taken care of and are very nutritious, whereas such vegetables as radishes, cabbage and turnips are better not given to a child, as they are difficult of digestion. Vegetables require careful preparation and should be cooked for a long time.

Fruit.—Oranges, grapefruit, ripe grapes, peaches and ripe apples, pineapples, cherries and stewed prunes are to be given daily. Whereas berries, watermelon, cantaloupe and bananas frequently cause considerable trouble and are best left out of the diet. Stewed prunes are of value to constipated children. They are best prepared by thoroughly cooking in water until the skin is soft and then adding some sugar. Cooked fruit is always better for a child. However, if a child is healthy, if there is no tendency to intestinal trouble and if there are no prevailing epidemics of bowel disorder, it may be given raw fruit. If the bowels are loose, never give fresh fruit. There can be no doubt of the fact that if all children were to be given stewed fruit instead of raw during the hot summer period, the intestinal troubles would be considerably reduced, both in severity and number.

Bread should be given with every meal. Toasted bread, Zwieback, Holland rusk, Hunter & Parmlee's biscuit and crackers represent the best forms in which bread is given, while hot rolls, hot bread and hot biscuits are indigestible and should not be given.

The child requires a certain amount of sugar which may be given with the cereals and in the form of jam, preserves, stewed fruit and occasionally candy and cakes. Excessive sugar produces serious and often fatal intestinal trouble.

Desserts.—Rice pudding, bread pudding, tapioca pudding, ice cream and cakes are all right, whereas pies, plum pudding and pastry cause trouble.

Drinks.—Milk, buttermilk, cocoa and water are proper drinks for a child, while coffee, tea, coca-cola and wine should not be given.

The preparation of food plays an important part in this matter. Food intended for a child should be well prepared and served in an attractive manner. This has much to do with influencing the appetite of delicate children and must be insisted upon in all cases.

Food for children should not be fried, as such means of preparation introduces into the stomach the most indigestible form of fat, hot melted fat. Not only is such fat indigestible, but is, as a rule, administered in excessive amounts when given this way. Care should be exercised to avoid a monotonous diet.

Overeating should also be avoided, and for this reason an older person should be present, when practicable. A very pernicious habit is that of eating between meals, and such procedure should be strictly prohibited.

It is a well known fact that the emotions influence the process of digestion. Many attacks of vomiting and diarrhea are brought on through excitement, fear, fatigue and shock. A child out of breath, excited and hot from play, is in no condition to properly digest his food. Sudden fright occurring while eating, has been known to produce serious trouble. No child should be permitted to eat hastily, and such fault must be corrected with patience. All children should be taught to eat slowly and to masticate their food thoroughly. There is an old saying, "Children should be seen and not heard." It is not well to take this too literally. It is well to regulate and limit the child's talk at the table, but it should not be forbidden conversation entirely. His talk at the table provides a little break in the taking in and mastication of food and thus gives time for the gastric juices and those of the intestines to mix well with the food.

A child should never be scolded at the table, nor should it be caused to cry while eating. A scolding mother and a highly sensitive child make a bad combination. It is a very important fact that the child should be allowed ample time in which to eat his meals, and one cause of the great amount of intestinal disorders prevalent in school children is the very limited noon hour which the school authorities give them. There can be no question of the fact that many of the digestive disorders are directly traceable to this abuse of the digestive organs.

It has not been my object in presenting this paper to adhere strictly to caloric standards and values in preparing this diet, as I have only attempted to place before you a list that is applicable for the average school child.

You cannot fully realize how much it means for a child to receive food prescribed according to scientific idea, nor how much good will reach him if his surroundings are clean, sanitary and inviting, but it is not too much to say that if proper care and attention to this important factor is given, the terrible summer epidemics among children, with the great loss of life and suffering that they entail, the poor, pale, anemic scholar, the sickly boy and the weak, emaciated girl, will in a measure disappear from our midst, and in their place we will have more robust, healthy and vigorous children, fully capable of maintaining themselves creditably in all mental and brain work.

About Miss Mattie Morningglory, by Lillian Bell, author of "The Story of the Christmas Ship," "The Love Affairs of an Old Maid," "A Little Sister to the Wilderness," "The Expatriates," "Carolina Lee," "Why Men Remain Bachelors," "The Runaway Equator," etc. Price, $1.35 net. Rand McNally & Company, 536 South Clark street, Chicago, Publishers.

This is one of the sweetest love stories ever told, fairly teeming with humor and pathos. Miss Bell has woven a charming narrative about little Miss Mattie Morningglory, a warm-hearted, impulsive diminutive milliner, whose first affections are centered on a worthless scamp, who has deceived and robbed her.

The arrest and exposure of her sweetheart open Miss Mattie's eyes to his perfidy and the subsequent shock sends her to a hospital. Here, while recovering from her grief over her shattered dream, she is aroused from the selfishness of her disappointment by learning that an operation is to be performed on a beautiful orphan child in the cot adjoining hers—an operation which is so dangerous that there is slight hope of the child's recovery. Little Gracie is adopted by Miss Mattie to save her from the operation, and in this act is laid the cornerstone of the beautiful love story of cultivated, fastidious Matthew McCabe and this gentle, innocent-minded old maid—a story through which Miss Mattie's unselfish Christianity shines with a brilliance which is reflected by all who come in contact with her.

Miss Mattie gradually accumulates a household of waifs, whom Gracie calls "little lambs who cannot keep up with the flock." It is about these children; the neighbors, Mrs. Galloway, Maggie Connor, Mrs. Shapiro; and old man Sproule, that the tale is told. Each character is a distinct type and is drawn with a master hand. Mrs. Galloway will take a place with Sairey Gamp.

The plot abounds in many delightful surprises.

SOCIETY TRANSACTIONS

MEDICAL SOCIETY OF THE STATE OF NEW YORK

Section on Medicine

Tuesday, May 16 — *First Day*

The Chairman, Dr. John L. Heffron of Syracuse in the chair.

This was a joint meeting with the Sections on Public Health and Pediatrics.

Vision of the School Child.—Dr. F. Park Lewis of Buffalo said that increased deficiency of the individual was one of the most important features in the problem of preparedness. A physical defect such as imperfect sight or defective eyes might be a sufficient handicap to place those who would otherwise be self-supporting in the dependent class. For the protection of the State the citizen must be raised to the highest efficiency. This would be found to be economically profitable. In order that individual data might be secured, the eyes of every school child should be properly examined. To do this standardized methods were essential. Where it was impossible for the individual to pay for the relief of difficulties that impeded his usefulness the assistance of the State must be required. All preliminary examinations should be made in the schools and by the teachers. Boards of Health should have on them those trained in ophthalmology. To these should be assigned the examination and the relief of corrigible defects. To meet these requirements place and time must be given in the schools themselves. The co-operation must be secured of both the teachers and the parents. This could be done by giving illustrative lectures in the schools on the nature of the defects, the importance of their correction, and those responsible for the correction should be urged to see that this was done. Such records might have great value in the case that compensation was claimed for injury to sight. If it then could be shown that defects existed while the claimant was still a child, or if it could be shown that good vision was present, which the defendant denied, these school records, which should be available, would aid in securing more equitable results. Graphic illustrations were shown by lantern slides of the way objects appear to those having myopia of different degrees, astigmia, corneal scars, tubular sight, color blindness, etc.

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*Medical Record.

Some Practical Experiences in Mediial Inspection in Rural Sections.—Dr. William A. Howe of Albany said that during the first year of the administration of the medical inspection law many impressive and varied experiences have arisen throughout the State. Those to which he wished to call attention were taken from the rural sections where many of their most difficult problems in this phase of the work were to be found. Many grateful parents had written the Department of the wonderful relief extended to their children. Thousands of children had been placed on a higher plane of physical fitness, thus enabling them to make normal progress in school. While most of these cases belonged to those commonly seen, many had been most impressive, and a report of several such cases was presented. In conclusion, and in view of such experiences as well as many others which might be given, he offered the following suggestions: That only physicians interested or willing to take an interest in the work be utilized as medical inspectors; that the utmost care be exercised in all examinations, and that definite care should be shown in giving information to parents regarding the nature of the defects found; that physicians should receive a fee commensurate with the services rendered, which on all occasions should be his best; that physician, teacher, parent, pupil, and nurse should co-operate in the entire system of school inspection; that the real success of school inspection would be measured by the thoroughness with which the examinations were made and the results accomplished-

Scope of Practical Examination in Routine School Medical Inspection.—Dr. Clinton P. McCord of Albany, N. Y., read this paper. The most essential thing to determine in a given district was the size of the working staff. Any district with 3,000 children should employ its school medical inspector for "full time." The working unit was one doctor and two nurses for each 3,000 children. An examination of the character indicated in the health certificate referred to in the New York State law was practicable only in a physician's office and could not be properly accomplished in less than a half hour. In most school buildings the only examining room available was the kindergarten in the afternoon or the principal's office. Under such conditions the removal of the clothing was not practicable and besides, a competent examiner would be able to ascertain all facts required for purposes of school medical inspection without removing any clothing except in a relatively small number of cases. This last group included the poorly nourished children, those with cervical nodes that showed a tendency to break down, those with chronic coughs or digestive disturbances, those that were extremely nervous or those that suffered from dizziness and shortness of breath. In considering routine examination they must consider the question of school medical inspection records. Some difference of opinion here existed. Discussion fell under two possibilities: (1) A suggested standard card plus supplementary cards for various records, etc., or (2), suggested data essential for scientific work, leaving the actual form of the cards to the local executives. A card system should include the following: physical record card; parental notification card; miscellaneous care card; report of sanitary survey; medical inspector's report blank; school nurse's report; dental records; physical training card; open air school records; and special class records. In most places today the working unit was too small to give all the children adequate care. Proper standardization of the working staff and scope of the work should be their first thought. It was of little good to require an examination involving a chest examination when one "part time" man was appointed to 4,000 or 5,000 children. Where conditions were such that a "part time" man had more than 1,000 children a chest examination should not be considered except in the case of the relatively few anemic, nervous children and those with suspicious lymph nodes, or those that brought to them evident signs and symptoms of organic heart disease. Working two hours a day, five days weekly, for thirty-six weeks, an inspector might examine approximately 1,000 children. Working one hour a day for the school year he would examine approximately 450 children. Certain standards should be suggested to govern the reporting of defects. An analysis of examinations of several thousand children by 167 different general practitioners showed a wide range in standards of judgments as to the existence of physical defects. The routine examination should cover the following:

Eyes: Snellen card test plus a card for near vision and astigmatic chart in some cases. These tests must be given with an appreciation of the possibilities of error in handling children. Ears: The watch test is perhaps the most practicable. There was considerable variation in the response of children at different ages. Discharging ears were serious. Tonsils: Enlarged and cryptic tonsils with a history of frequent sore throat were perhaps pathologic. Nose: The medical inspector diagnosed nasal obstruction, leaving it to the family physician to determine the cause of the obstruction. Teeth: The decay of the "six year" molars was the most important thing to look for. It was poor economy to employ a dentist to inspect mouths of school children; he had better be employed in the actual treatment of the most urgent cases. Nutrition: The judgment of nutrition was based on pinched, pallid features, arrested development, the lack of spontaneous activity, weak and flabby tissues and the signs of nervous exhaustion. Skin and Glandular: The enlarged cervical nodes associated with poor nutrition, those that became acutely inflamed and those that underwent softening were the ones that merited attention. Eczemas and any contagious or parasitic skin disorder should also be looked for. Simple home treatment for pediculosis was indicated. Orthopedic and Nervous: Stoop shoulders and flat chest, lateral curvature, "general nervousness," chorea, psychic disturbances of adolescence, epilepsy, mental deficiency, etc., should be kept in mind under this heading. Acute Contagious Diseases: This was a very important though relatively small part of the work of school medical inspection. The highest co-operation should exist between the inspector and the local health officer. Physicians new to the work of medical inspection and desirous of obtaining good results fresuently asked for directions. They should read a few good books on the subject. They should visit some city where a system of recognized efficiency was in operation and observe the actual routine work. They should keep in touch with the expert examiner of school children for some months. They should be familiar with the latest advancements in educational hygiene. They should keep an open mind. The medical profession as well as the parents should be awakened to the wisdom of health supervision prior to the school age. School health work was more than putting glasses on children who could not see well, removing adenoids, tonsils and filling decayed teeth; it involved a wide understanding of the various social, educational and economic problems that were closely bound up with the physical conditions of the children.

The Neuropathic Child.—Dr. Edward B. Angell of Rochester presented this contribution. He said he thought the best description of the neuropathic child was that given by Dr. Francis Warner of London who had examined 100,000 school children. That authority described the characteristic manifestations of the neuropathic condition as headache, difficulty in getting to sleep, grinding of the teeth, delicate physical condition without actual disease, lack of appetite, and tendency to be easily fatigued. These children were generally well made in body and had good heads; they had well cut features, fine skins and usually light complexions. There was a weakness and an overspontaneity. There were uncontrolled movements without co-ordination yet they early gave pleasure to the babe. Later impressionability and imitativeness showed that the child's mind was impressed by what it saw. With growth developed the power to arrest the motor concept and to modify or even deny its inhibition. Thus developed a control over the senses by which the mind gradually acquired desire and volition, the relative value of sensory impressions and motor action. Another quality developed was retentiveness and coordination action which was the result of many past impressions, desires and resulting movements. The normally constructed brain of the healthy child in its motor action presented well balanced muscular movements. The relationship between the muscle activity and the brain activity was very direct. Basing his test on these facts, Dr. Warner had found that requiring the child to raise his arms and hold them straight out in front in a horizontal position was a test of the nervous condition and the degree of fatigue. If the latter were present the child did not hold both arms parallel, or dropped one arm, or one hand, but in the very neurotic the knuckles of the hand were pointed directly backward. The normally constructed brain of the healthy child in its motor action presented well balanced muscular movements. The relationship between muscle activity and brain activity was very direct. Hence it was that military training not only developed the muscles but the brain as well, while the habit of instant obedience did much to establish healthy brain activity and normal self-control. Self-control could not be too thoroughly established for the growing child, since without self-control there was an unstable equilibrium which later gave rise to the vagaries of neurasthenia and hysteria. If one studied the nervous child he would find that his position might be one of erectness, of assurance or defiance, or it might be drooping and self-conscious, or one of weariness, or fatigue, the latter being more common in girls. Another habit easily acquired by the nervous child was that of introspection and this led later to unstable equilibrium and self-consciousness to the detriment of efficient mental activity. Dr. Angell said he had observed 75 or 80 cases of typical nervous children and had found that alcoholism and insanity had entered in as factors in about one-third of the cases, while the arthritic diathesis was present in about 30 per cent. In only one case did he find tuberculosis in the family, but tuberculosis probably played a more important part than this indicated in the transmission of an unstable nervous constitution. In about 25 per cent of these cases the condition could be traced to abnormalities in pregnancy or delivery Faulty metabolism, such as constipation, headaches, mental depression, irritability and a poor circulation were characteristic evidences of disturbed nutrition. There was defective nutrition in about two-thirds of the cases and nearly one-third were the victims of night terrors. He believed that protein entered too much into the diet. Fresh air was a most important factor in the treatment of this type of child. The Boy Scout was an excellent thing in developing the correlation of muscular and physical activities, teaching the boy self-control and how to adjust himself to life.

The Open Air School Child as a Type.—Dr. Edward Durney of Buffalo presented this paper. He said there was a type of children that were being segregated and were regarded as suitable for treatment in fresh air schools. They were the children that were living under wrong conditions of life, the children with a heredity of alcoholism or epilepsy, those who were the subjects of faulty nutrition, children of abnormal nervous activities, who thus dissipated their powers. Next in importance to the nutritional defects were the distinctly nervous conditions. Some of these children were the spoiled children of the so-called better families. The nervous conditions in these children ranged anywhere from chorea to partial recovery from infantile paralysis. The defects brought out by present methods of school inspection, such as defects of vision, adenoids, enlarged tonsils, etc., must be corrected if the children were to receive the full benefit of the fresh air treatment. The attitude of the children themselves toward these schools was the best argument in their favor. Records of the weight of these children had been kept and the gain in weight that had been shown was a positive index of the improvement in their condition. The change from the ordinary school to the fresh air school was frequently accompanied by an increased interest in both work and play. There was often a mental deficiency accompanying the physical defects, and with the methods used in the open air schools these defects were sometimes benefitted or removed. Among the children that would be improved by the open air school might be included a large number in the ordinary schools.

The Effect of Malformation and Infection of the Oral Cavity of the Child upon Its Future Health.—Stephen Palmer, D.D.S., of Poughkeepsie, read this paper by invitation. He said that the fact that a man belonging to the dental profession had been asked to address this society was very significant of the change that had come to pass. It meant a recognition of the vital relationship of medicine and dentistry. He quoted from the writings of Victor C. Vaughan to show the relations existing between mouth infections and various constitutional conditions. These made it evident that nothing was so important as the hygiene of the mouth of our boys and girls for upon that depended the health of the men and women of tomorrow. Evidence in support of this statement might be brought forward from many authorities. Medicine today recognized the importance of prophylaxis and in dentistry it found the prophylaxis of many conditions that had been puzzling to the physician. Malformations were of the utmost importance and were so common that one rarely saw a normal conformation of the mouth and teeth. This he attributed to the mixing of the races and the fact that enough time had not elapsed to evolve a definite type. To the proper moulding of the human face a full complement of teeth was requisite. Where there was a malformation, there was malocclusion, and this latter condition was the rule rather than the exception. The anatomy of the mouth and teeth was such that the loss of one tooth ultimately disturbed the balance of the whole. Therefore one cause of dental deformity was the loss of one tooth. Thumb, lip and tongue sucking were another cause of deformity causing malocclusion and a narrowing of the palatal arch, and nasal obstruction. It was therefore important for the rhinologist to work with the dental surgeon when it came to the treatment of mouth deformities involving the palatal arch, for such deformities retarded the function of the tongue, lips, and nasal passages. Mayo and Hunter had emphasized the importance of oral sepsis as a source of infection. In the demonstration of alveolar abscesses the X-ray had been a great help to the dentist as it had to the physician. The value of oral prophylaxis had been amply proved by the establishment of dental dispensaries and in every city and town there should be a dental clinic. Pyorrhea alveolaris was not a disease of childhood but with proper prophylaxis and the correction of malocclusions it could be prevented. One might put it down as an axiom that a clean tooth never decayed, that teeth in good occlusion were easy to keep clean, and therefore teeth in good occlusion never decayed. The value of oral phophylaxis had been amply demonstrated in the German army. Attention had been given to this matter among the school children of Germany and as a consequence few of the German soldiers required dental care, while on the other hand such work had not been carried on to the same extent in England and there was a great deal of dental work to be done among the soldiers of the English army. In September there would be a legalization of dental hygienists, which would make it possible to have a trained corps of dental hygiene before the public. By the concerted action of physicians and dentists the coming generation would be healthier than the present one.

Types of Cerebral Defects in Children that may be benefitted by Operation.—Dr. Herman G. Matzinger of Buffalo read this paper. He said that he was not concerned with orthopedic defects of childhood but only with those cases in which head operations were indicated. The nature of the underlying cause involved progressive and irreparable injury to brain tissue. All cerebrally defective were essentially feeble-minded and many of the worst cases, fortunately, died early in life. Nevertheless, one should not discourage any attempt to relieve them. In the inherited types, including infantile paralysis and Mongolian idiocy, prevention offered the soundest method of cure while operation remained purely experimental. This cause was so obscure that autopsies failed to reveal it. Proof was wanting that meningeal hemorrhage gave rise to diplegia. At necropsies, cysts, area of softening, wrinkling, or adhesions, indicative of more deeply situated pathological changes, were found but characteristic local pathology, gross or microscopical, of a causative nature, were entirely absent. As infantile cerebral paralysis attacked the brain early in life operative relief must be sought early if any good was to be expected from it. He considered hemorrhage a definite indication for operation. Similarly might Little's cases be operated upon. Operations were of no avail where there were early changes in the pyramidal tracts. Increased intracranial pressure added new symptoms to the old symptom complexes but was accountable for deaths in only 7 per cent of cases. Operation might be attempted for the relief of increased intracranial pressure but it must be remembered that simple incision of the dura was often not sufficient, for fluid might be enclosed in regions away from the site of incision. Dividing the falx or tentorium might, therefore, be necessary. Epilepsies developed in one half of the cerebral palsies.

Toxemia of Intestinal Origin in Children.—Dr. De W. H. Shearman of Buffalo read this paper for Dr. I. M. Snow of Buffalo. He said that the cause of death was shown by experiment to be not bacterial but altered mucous membrane, that the injection of fluid from a closed intestinal loop caused death with symptoms similar to obstruction, and that much had been learned through the investigations of Whipple, Hartwell, Draper, and others. These were tissue-dehydration and cerebral anemia from failure of absorption and from vomiting. A second theory of death was the absorption of bacteria through the damaged mucosa. A third theory ascribed the cause of death to an active toxin. Hartwell held the toxin might originate from the food, bacteria, or from a substance secreted from the intestine. High intestinal obstruction was considered more poisonous than low. The stagnation of detritus and of bacteria was not considered sufficient to account for the toxin. Hartwell occluded a loop of intestine 10-14 cm. from the pylorus. They were made to fast 55 hours. All the animals so treated recovered from the operations and lived 5-7 days. They vomited when given water. There was no peritonitis, and no apparent cause of death. The dogs given sterile water or saline lived longer than those that were not. Hartwell was said to be the only experimentor who worked without damaging the intestinal wall. He, also, eliminated the bile, pancreatic, and duodenal secretions from the site of obstruction. A retained secretion, as the gastric, was dangerous to the economy; an injured mucosa failed to alter its poisonous nature but allowed it to be absorbed in its toxic state into the blood stream. Hartwell believed, according to the author, that high intestinal obstruction might not produce death when the mucosa was not damaged, that changes in obstruction were found in the liver and in the kidneys, that hemotogenous bacteremia did not necessarily occur, and that bile, pancreatic, and duodenal secretions were not necessary for the production of death in intestinal obstruction because double occlusion of the ileum was lethal. The lethal toxin was the product of secretion of the injured mucosa or of bacteria. He did not consider that Whipple had excluded bacterial activity in his study of intestinal death. The contents of a closed loop injected into an animal of the same species produced death. If this secretion was duodenal, death occurred in 4 hours and in such cases the duodenum was found to be congested.

Intestinal Obstruction in Children with Special Reference in Intussusception.—Dr. Edward W. Peterson of New York read this paper. Intestinal obstruction occurred in imperforate anus, congenital bands, acquired intussusception, obturation, volvulus, intestinal paralysis, and in infarction of the mesenteric vessels. Congenital occlusion high up in the intestinal tract was difficult to recognize. Intussusception occurred at any age but more frequently early. In the first year the picture was clean-cut, and the mortality was insignificant in those cases that were recognized early and operated upon. If the diagnosis was delayed the death rate was high. No other form of obstruction was more mismanaged and in no other form was the mortality due as much to criminal procrastination. There was obstruction of the blood supply as well as of the fecal current. The obstruction might be intestinal, colic, of iliocolic. It might be simple or compound. Seventy-five per cent of the intestinal obstructions were in the iliocolic region. As a rule, a well, strong child was seized with abdominal pain, tumor and bloody stools. The child would become calm after this initial attack. Muco-hemorrhagic stools developed two hours after obstruction. Vomiting was prominent, especially late in the disease, but seldom fecal in character. In every case there was an abdominal tumor which was admittedly often difficult to palpate because of the rigidity and distension. From the beginning, the pain and stools varied with the degree of the strangulation and the toxemia arose from the injury to the lining epithelium of the gut. Occasionally the symptoms might be less acute; there might be no strangulation of the vessels. One should differentiate purpuric disease. The X-ray helped diagnose difficult cases.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE

Prevention of Blindness.—The most unfortunate condition which may afflict humanity is blindness. Occurring, as much of it does in childhood, it is a calamity beyond description. Terrible as is the calamity to the sightless victims, it is also unfortunate for society, for the majority of the blind become dependent upon society for their care and support. None of us ever refuses to help the blind when opportunity presents itself, but do we do as much as we could to prevent it? It is charitable to help the blind, but how much more charitable and how much more beneficial would it be prevent it?

There is no doubt that much of the blindness, and the misery attendant thereto, could be prevented if proper means were used at the proper time. Dr. C. St. Clair Drake, secretary of the State Board of Health, has been doing excellent work along this line, and to him mostly must be given credit for the law requiring the reporting of these cases.

The American Medical Association began several years ago, through a subcommittee of the council, a propaganda looking toward the conservation of vision, and its work has encouraged both physicians and ophthalmological societies to work more earnestly for the prevention of blindness.—West Med. Times.

Treatment of Hyperpyrexia in Young Children.—A. Hymanson, in the American Journal of Obstetrics for February, 1916, New York Med. Jour., reports the case of an infant with partial atelectasis, capillary bronchitis, and at one time a temperature of 110 degrees F., in which the efficacy of hydrotherapy in this class of patients is illustrated, the baby's life being prolonged for a time, though death occurred several weeks later. The most satisfactory antipyretic for young children is water. In giving a cold pack, cold bath, or cold colon irrigation, in order not to frighten a timid child, it is best to begin with a temperature of 95 degrees F., and to lower it gradually by addition of cold water or ice down to 60 degrees or 65 degrees. Gentle friction of the body and extremities must be carried out during the bath. At times the heart must be sustained with stimulants. After the bath the child should be well covered until cutaneous circulation is re-established. In the author's case of hyperpyrexia, a colon irrigation , begun at 85 degrees and cooled gradually to 65 degrees, with rubbing of the radial arteries and head with ice, followed by a bath beginning at 85 degrees and gradually reduced to 70 degrees, led to a slow drop in the body temperature from 110 degrees to 99 degrees.

Bacterial Affections of the Kidneys in Children.—H. L. Kowitz (Jahrbuch. f. Kinderheil., Oct., 1915,) says that pyelocystitis is frequent in infants, but is seldom recognized, the fever being referred to other conditions, so that the condition goes on and becomes chronic. Formerly it was supposed to ascend from the bladder, but at the present day it is supposed to come by way of the blood-vessels. In the largest number of cases the cause is the bacillus coli communis. In the Clinic at Magdeburg the author observed forty cases in children under two years of age. In all febrile diseases, especially in gastro-intestinal diseases, chemical, bacteriological and microscopical exam- of April, 1915. All three cases were fatal. In one there was an tinal disturbances accompanied the pyelocystitis. The kidney trouble appeared from three to nine weeks after the beginning of the intestinal condition. The largest number occurred in July and August, in hot weather, the smallest number in the winter, when gastrointestinal diseases are least frequent. If the disease ascended from the bladder it should begin with a cystitis, which is not the case. The urine was obtained by the author under aseptic precautions, centrifuged, and cultivated in agar and gelatine. Out of the forty cases there were thirty-seven of pure colon bacillus and three of mixed infections with staphylococci and streptococci. In these three mixed cases a furunculosis was present. The germs were also found in the blood stream. The anatomopathological examination showed that the infection was hematogenous. There were small abscesses in the kidneys and hemorrhagic zones, leukocytes and lymphocytes were found in the tissues. The canaliculi were dilated, there were increase in the connective tissue, fat in the canals and glomeruli, and scars of old abscesses. In the pelvis were increase of connective tissue and cell infiltration, and changes in the epithelium. In the baldder were hyperemia and thickening of the mucosa. It would seem that pyelitis is a phase of a general disease, not primarily a local phenomenon. The blood picture shows leukocytosis, and eosinophilia. In the urine albumin is found with a bacteriuria added. Pus cells, epithelia, and casts are found, with red blood cells. The author concludes that we have an infection of hematogenous origin, which we should call a bacterial nephritis, or a colinephritis rather than a cystitis.

Hearing Tests in School Children, by Macleod Yearsley.—British Journal of Children's Diseases; May, 1916.—The standard test is the forced whisper test and the standard distance is twenty feet. One classification is—a, very slightly deaf, when unable to hear the whisper at twenty feet, but beyond six feet; b, slightly deaf, between three and six feet; c, hard of hearing, no whisper at three feet, but ordinary voice at six feet; and, d, very deaf children. Of a series of 194 children examined, 31.4 per cent. had defective hearing, but in only 5.6 per cent. was the defect marked. The commonest cause of defective hearing in another series of 1,000 cases was chronic middle ear disease and Eustachian tube troubles; then, plugs of cerumen, suppuration, and, finally, the results of suppuration.

Nephritis Without Albuminuria, by J. Porter Parkinson.—British Journal of Children's Diseases; May, 1916.—A boy aged three and a half years was admitted to the hospital suffering from pneumonia. He had been ill for three weeks previously with cough and fever. He had had pneumonia at the age of nine months. There were signs of consolidation in the left axilla. The temperature rose daily to 103 degrees F. until the sixth day after admission, when it fell to normal by crisis. The urine, examined every third day, showed nothing abnormal. On the fourteenth day after admission there was slight edema of the face and the following day other parts of the body were affected. The daily examination of the urine now showed a few hyaline and granular casts and an occasional red cell, but no albumin. The amount of urine passed was normal. Most cases of this sort seem to be the result of scarlet fever, but in this particular case there was no history of any acute specific or other cause, except perhaps acute pneumonia.

Dermatitis Exfoliativa of the New-born.—Marie Kaufmann-Wolf (Jahrbuch. f. Kinderheil., Oct., 1915) has observed three cases of dermatitis exfoliativa in the new-born. This uncommon disease occurred in 297 cases in ten years, at the Findelanstalt in Prague, and was reported by Rittershain. By him it was considered to be a noncontagious disease of early life, sharply differentiated from pemphigus neonatorum. At the present day most authors believe it to be contagious and simply a carying degree of the same process which produces pemphigus. Its contagiousness is a logical postulate for those observers who believe it to be an exogenous affliction due to streptococci. The author saw three classic cases between the 9th and 22d of April, 1915. All three cases cases were fatal. In one there was an exactly similar affection of the mother's breast below the nipple at the portion of the breast where the child's face touches it in nursing. The child was born normal, of a healthy mother who showed no specific disease. The blebs appeared on the fourth day after birth. A few days after the child died the breast became painful and an eruption appeared on it, exactly similar to that of the child. She also had some nodules of hardened milk glands in the same breast. After eight days' treatment it was entirely healed. The clinical picture was exactly that of dermatitis exfoliativa, as seen in infants. It would appear that there was a direct contagion from child to mother. The breast had no visible cracks which could have been inoculated. The incubation period was ten days. Perhaps the lesions on chin and arm were the same as that on the breast.

Dyspitnitarism, by Sidney Stephenson (Brit. Jl. Dis. Child.; N. Y. Med. Jl.)—The patient, a girl aged fifteen years, came under observation complaining of failing sight for three or four months and headaches for one week. The vision at the time was R. 5-5, L. 5-36, and an examination under atropine revealed R. plus 0.50 cyl., axis 180°; L. plus 0.50 sphere. Seven weeks later the sight in the right eye was reduced to "shadows," while the left had remained the same. The sight of the right eye was stated to have failed suddenly two weeks before. The pupil of the right eye did not react directly to light, both optics discs were pale, but the retinal vessels were of normal dimensions. The girl appeared stout and the eyes were prominent. She was admitted to the hospital and the blood count showed a hemoglobin of sixty-five per cent, with a color index of 0.86. The Wassermann reaction was negative as to both the blood and the cerebrospinal fluid. Some time later she was placed on thyroid gland, one grain twice a day, as up to this time she had not menstruated. The vision was now reduced to perception of light in the right eye and to 3-60 in the left. The field of vision in the left eye was restricted in the temporal region. The dose of thyroid was shortly after increased to four grains a day. The condition gradually grew worse until the vision in the left was reduced to 1-24 and in the right to perception of light. The diagnosis of dyspituitarism is likely because of: 1. The existence of bilateral simple optic atrophy; 2. Loss of the temporal field in the left eye; 3. The X-ray evidence of enlargement of the sella turcica, and 4. The patient's general appearance. Surgical treatment is indicated, as no result was obtained after large doses of thyroid.

Soy Bean and Condensed Milk in Infant Feeding.—The class of cases and circumstances under which this mixture is advised by J. Ruhrah (Amer. Jour. Med. Sci., 1915, cl, 502; Amer. Jl. Dis. W. and Chil.) may be outlined as follows: When fresh milk cannot be obtained, or when the milk supply is very questionable; in summer, when there is some question concerning the milk supply and in instances where the infant is found to be incapable of digesting cow's milk. It will also be found useful in certain cases of intestinal indigestion in infants who, under ordinary circumstances, can digest cow's milk, but who have had their intestinal functions temporarily deranged. It may also be of service in cases of chronic vomiting, and particularly useful as a food after summer diarrhea. Without the condensed milk the gruel may be used as a food in many diarrheal conditions with considerable advantage, but there are many instances in which it will not agree with the child. The use of soy-bean gruels alone without barley or some other cereal may be recommended under very exceptional circumstances. This method of feeding can be used without any danger. It will not produce rickets, and with a very small amount of some antiscorbutic food, will not produce scurvy. It permits a perfectly normal development as far as bones are concerned, and in successful feeding the infants present the appearance of breast-fed babies. The best method to begin feeding mixtures of soy bean and condensed milk is to make a gruel composed of one level tablespoonful of soy flour, two level tablespoonfuls of barley flour, a pinch of salt, and one quart of water. This should be boiled for twenty minutes, or even longer, and the water lost in the cooking should be replaced. To this is added condensed milk, varying from 1 to 16 to 1 to 8, according to the age of the child and other circumstances. This may be used in quantities varying from 2 to 8 ounces at a feeding. The feeding may be two, two and a half, or three hours, usually three hours, and occasionally, in difficult cases, this may be lengthened to three and a half or even four hours. The amounts of condensed milk and the strength of the gruel may be varied according to circumstances, using weaker mixtures if there is vomiting, or if there are symptoms of indigestion, or if the stools, after a number of days, do not appear to be more or less normal. The stools of babies fed with soy-bean mixtures are slightly brownish in color, should be perfectly well digested and smooth, not unlike in appearance those of babies that have been fed upon malted milk. In children who are not gaining, and yet who seem to be taking the gruel well, the amount of condensed milk may be increased to one ounce of condensed milk with enough gruel to make eight ounces, and in exceptional cases, even to 1 to 6. The gruels may vary in composition, and in older children they may be increased to double the strength advised above—that is, two level tablespoonfuls of soy flour and four of barley, and occasionally this may be increased still further. If the soy bean is used too strong, or if it is used without a sufficient amount of carbohydrate with it, as in perfectly plain gruels without either cereal flours or condensed milk, it is liable to cause thin, dark-colored, foul-smelling stools, owing to the high protein and fat content, and the very small amount of carbohydrate present.

Milne's Method of Preventing the Transmission of Contagious Diseases.—According to Lemoine and Devin (Bulletin de l'Academie de medecine, April 4th, New York Medical Journal), a modified Milne procedure was carried out in some improvised military hospitals where a sudden influx of contagious cases, coupled with the restricted quarters available, rendered proper isolation of the cases impracticable. The method was thus put to the test to an extent inadvisable under ordinary conditions in civil practice. In January, 1916, a number of cases of diphtheria, measles, scarlet fever, and mumps had to be lodged in a factory previously used for cases of slight wounds and mild illness. A few wooden partitions were rapidly erected, rather to separate the different groups of cases than with the idea of affording any sort of isolation, and Milne's method was rigorously applied. Over each bed a mosquito netting, consisting of gauze, was hung from the ceiling and tucked under the mattress and bolster round the patient. Tincture of eucalyptus and gomenol were thoroughly sprayed over this netting three times a day, the patient's throat was carefully painted with a one in sixty iodine glycerin solution every three hours and a solution of gomenol in oil instilled in the nasal fossae at like intervals. These measures were carried out either by the physician himself or by a special nurse attending to a single group of patients. When the patient, clinically well, left his bed, he was kept for a time in the division set apart for suspected cases, and the throat and nose were disinfected as before three times a day. There were thus treated within a month ten cases of measles, eighteen of scarlet fever, sixteen of mumps, and twelve of diphtheria. No instance of transmission or complication was observed. Stress is laid on painstaking treatment of the throat and nose; superficial applications to the tonsils or gargling with some ordinary more or less antiseptic solution would undoubtedly render the procedure a failure. By careful application of the Milne method the period of isolation after contagious diseases could be greatly shortened. Thus, in scarlatina, instead of continuing isolation until the end of desquamation, at a time when the mouth and pharynx are the sole actual sources of contagion, all danger could be removed by a strictly carried-out local disinfection of these cavities. The results obtained already in diphtheria in this direction could undoubtedly be obtained in scarlet fever.

Impaired Resonance at the Apices in Children.—Fr. Mielke (Berlin klin. Woch., 1914, li, 1218) contributes interesting investigations bearing on the diagnosis of impaired apical resonance in children, and offers eighteen cases to illustrate his points. In many poorly developed children with pallor and loss of appetite, an impairment at one apex would generally indicate apical tuberculosis. If, besides this, there is a poor family history, a positive Von Pirquet or possibly elevated temperature, the diagnosis would seem to be confiremd. On closer study these children are found to exemplify a type characterized by muscular weakness and poor development of the spine and back. In standing they exhibit a marked lordosis, with often a slight kyphosis of the lumbar vertebra. The conformity of the vertebra is still infantile and in this position a slight scoliosis exists. Asked to stand erect, the child leans back still farther, increasing the scoliosis. Even a small bending of the vertebral column in a small, elongated thorax will cause a shortening of the percussion note at the apex. If the child's position be corrected by having him lean forward slightly, the arms hanging loosely downward and the abdomen drawn in, the muscles of the thorax will be relaxed, the spine straightened, and on percussion of the apex the impairment present in the erect position will have disappeared. This would indicate that an impairment is only significant when it persists in the corrected posture. Roentgen-ray plates of these cases show the first three ribs lying closer together than normal and the first rib sunk inward, thus narrowing the upper thorax aperture. This fact, coupled with the crooked posture due to muscular weakness, explains the production of the pseudo impairment. The eighteen cases cited clearly demonstrate Mielke's contention, as most of them seem tuberculous from their general symptoms and the impairment present in the uncorrected posture, but in all of them the impairment disappeared in the correct posture, and roentgen-ray examination showed no pathological change in the lungs, even in cases showing a positive von Pirquet, an elevated temperature, or a tuberculous family history. Mielke suggests that this method applied to apparently tuberculous children might lower the statistical incidence of tuberculosis in childhood.

X-ray Treatment of Ringworm of the Scalp.—G. M. Mackee and J. Remer (Med. Rec., Aug. 7, 1915; Amer. Jl., Dis. W. & Chil.) favors the massive or intensive dose method of treating ringworm of the scalp. The essential points in the technic are briefly as follows: Cut the hair short. Indicate five points on the scalp with a skin pencil, the points exactly five inches apart, and draw lines between the various points, as indicated in the illustrations and described in detail by the writer. Apply an epilating dose (H 1 at skin distance, B 9 or 10) to each of the five points. Apply protection only to the face, ears, and neck. The vertical rays are aimed directly at the point under treatment, and each exposure must be at right angles to the other exposures. Measure the quantity accurately with a reliable radiometer. The quality must be estimated by means of some reliable penetrometer, such as the Benoist instrument, together with indirect methods, such as the milliamperemeter, ammeter, etc. The head must not move very much during the exposure. Absolute immobility is desirable. The hair falls out at the end of about three weeks and starts to regrow in about three months. It is essential that no irritating applications be applied to the scalp for two weeks prior to the treatment. As a matter of fact, if chrysarobin, tar, or iodine has been applied, it is better to await the lapse of four weeks. Subsequent to the treatment such chemicals as iodine, tar, and chrysarobin are prohibited. It is preferable to allow no application for about a month, at which time a 5 per cent. ointment of sulphur or ammoniated mercury or some other mild antiparasitic agent may be employed. While the hair is falling the child should wear a linen cap, which, with the fallen hair, can be destroyed, so as to protect other children.

BOOK REVIEWS

A System of Diet and Dietetics, by G. A. Sutherland, M.D., F.R.C.P., and nineteen other eminent English authorities. Nearly 900 pages; handsome buckram bindings; $6.00 net. Oxford University Press, 33 West Thirty-third street, New York City, publishers.

The subject of diet in disease has not received the attention in medical literature it deserves; neither has it been accorded the prominence in the curriculum of medical schools which its importance demands. Therefore, the subject of dietetics has been and still is sadly neglected by the medical profession. Indeed, it is one of the most deplorably neglected subjects in the whole domain of medicine. While it is true that the subject is more widely appreciated at present than formerly, yet the average practitioner cannot tell the full value of a glass of lemon jelly or the definite amount of the various food elements of food substances contained in a pound of beef. The scientific value as well as the proper kind and dosage will often be of far greater value to the practicing physician than any knowledge of their therapeutic action on drugs.

It is to be regretted that at present there is no satisfactory work on trophotherapy which can be said to supply the general practitioner with an infallible guide on the subject. We would like to see a work explaining the demolition of the protein molecule into the various amino-acids and their metabolism in the process of absorption. The lipoids are of sufficient importance to receive consideration. The vitamines of foodstuffs is an all-absorbing subject which at present is little understood, but its importance is so far-reaching that in involves a large proportion of the foods of civilized man, and therefore should receive considerable attention.

From a careful perusal of this work about all that has been attempted is to set forth the principles and practice of dietetics of eminent English internists and specialists who have had special experience in the special fields upon which they write. For this reason the dietetic teaching of this volume represents the views only of the author writing on a particular subject; but the authors are men of eminence—leading authorities—and their teaching can be accepted as the best views on the particular subject under discussion. Doctor Sutherland, the Editor, has rendered a magnificent service to the profession in collating the contributions from the most eminent English authorities, and compiling the material so as to obviate the minimum of clashing as to views of the various authors, and the whole may be taken as reflecting the divergence of opinion which exists in the profession on the subject of diet.

The finish of the paper is soft and pleasing to the eye. The type plain, clear and readable; bound in elegant buckram, presenting a handsome and serviceable volume.

American Illustrated Medical Dictionary (Dorland). A new and complete dictionary of terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Veterinary Science, Nursing, Biology, and kindred branches; with new and elaborate tables. Eighth Revised Edition. Edited by W. A. Newman Dorland, A.M., M.D., F.A.C.S. Large octavo of 1,135 pages, with 331 illustrations, 119 in colors. Containing over 1,500 more terms than the previous edition. Flexible leatner. $4.50 net· thumb index, $5.00 net. W. B. Saunders Company, Philadelphia, Publishers. 1915.

Since the day when "Dungleson's Medical Dictionary" held the field exclusively, a number of excellent medical lexicons have appeared and this is one of the best. The fact that this dictionary has passed through eight revisions and been printed sixteen additional times during a period of sixteen years, evinces its popularity, and at the same time is expressive of a fitting testimony to its author, attesting the value and usefulness with which the work is esteemed by the medical profession.

The immediate success of Dorland's Illustrated Medical Dictionary is due to certain features that distinguish it from all others of its class. It gives the maximum of matter in a minimum of space at a reasonable cost. Of especial value to the laboratory worker are the tables of metric and common weights and measures compared. The tables of various micro-organisms, stains and tests are particularly helpful and time-saving to the student; also the tables of arteries, muscles, nerves, regions of the human body, stains, solutions, triangle tests and comparative tables of weights and measures. This latest revision contains the pronunciation of every word, while many others only give the accentuation.

A special feature is the derivation of etimology o fwords given from the Anglo-Saxon as well as from the Latin and Greek. The illustrations deserve especial commendation, and especially those in colors.

The present edition has been thoroughly revised and reset, incorporating 1,500 new words, together with their pronunciation, derivation and definition. During the past two years many new clinical and laboratory tests have been brought forward, with the result that the list of tests in this dictionary has been increased from ten pages in the last revision to nineteen pages in the present, which, together with other new changes and additions, increases the text matter in this revision by over thirty pages. The book is bound in strong flexible leather covers. The text is printed on a fine quality Bible paper, and the clear, legible type makes the book a comfort to the seeker after knowledge. The student and practitioner will find the eponymic tables of diseases, methods of treatment, signs, symptoms with the table of poisons, posologic and therapeutic a valuable time-saving arrangement.

That improvement may be made in so technical a book as a medical dictionary is shown in the excellence of this publication, which has just left the press. We again commend this dictionary to authors, writers, physicians and students of medicine and allied sciences. The publishers appreciate the unusual value of this work, and as a result hand you a volume in flexible morocco, truly a luxuriant specimen of bookmaking. We congratulate the author and publishers, and look forward with interest to the appearance of the ninth edition.

Lateral Curvature of the Spine and Round Shoulders, by Robert W. Lovett, M.D., Boston; Professor of Orthopedic Surgery, Harvard Medical School; Surgeon to the Children's Hospital, Boston. Third Edition; Revised and Enlarged, with 180 illustrations. Price, $1.75 net. P. Blakiston's Son & Company, 1012 Walnut street, Philadelphia, Publishers.

Unfortunately the successful treatment of lateral curvature of the spine in the past cannot be classed as one of the achievements of orthopedic surgery. However, in the past decade a good deal of progress has been made along new and promising lines by means of experimental and clinical work, which makes the outlook a little more hopeful. Dr. Lovett has attempted in this volume to gather together the newest and latest methods of treating deformities of the spine. Since the apperance of the last edition of this work Dr. Lovett's methods of forcible correction have been received with a good deal of enthusiasm and accepted by many of the leaders in this special branch.

In this revision Dr. Lovett incorporates many well recorded cases and many other parts of the work have been reclassified and rearing on treatment has been entirely rewritten; other parts have been condensed, and a chapter on the history of scoliosis has been added and many other parts of the work has been reclassified and rearranged in order to present the subject with greater clearness. Altogether, it presents a very desirable monograph on this subject.

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PEDIATRICS

Vol. XXVIII JULY, 1916 No. 7

EDITORIAL

TEETHING AND FEVER

There is no more homely subject for consideration than that of teething in infancy, and, we fear, there is no question in pediatrics that is in more need of careful and systematic reinvestigation than this. The newer work by Pavloff on the nervous influences that control the intestinal canal has brought out so many important facts concerning the relation of one portion of the intestinal tract to another that much of our pseudo-knowledge is in need of revision and correllation.

Corson, writing on this subject, gives a very short, though timely contribution to the "Fever of Dentition" which is worthy of slight comment. He speaks of some early experiences in which death followed lancing of the gums, and of his mistakes in assuming that swollen gums were the chief source of troubles that were of a much more serious and involved nature.

So far as the mouth alone is concerned, he says, a very large majority of the cases of dentition, no matter how much swollen or how painful the gums may be, are simply cases of physiological congestion of the parts involved, and if fever is present we must look elsewhere for its cause.

Uncomplicated cases of dentition the physician rarely sees; it is only when fever attends dentition that the family attendant is consulted.

The commonest disturbances associated with dentition are those of gastric or gastro-intestinal irritation. These show themselves by constipation, or more often by diarrhea, nausea, vomiting and various pains and, most important of all, by fever.

The reasons why the intestinal disturbances may be considered as provocative of the fever, are several: In the first place, similar gastro-intestinal disturbances, independent of dentition, are usually associated with fever. Secondly, the nervous influences that tend to hinder digestion result in food stasis and the consequent absorption of semi-digested and semi-prepared albumoses, which act like bacterial toxins and cause fever. Vomiting relieves the stomach of these products and brings about reparation.

Dr. Corson thinks that too much attention has been paid to the much maligned liver and not enough to the duodenum. We heartily agree with him and welcome the suggestion that many of the cases of fever attending dentition may best be termed "duodenal fever."

DIFFERENTIAL DIAGNOSIS BETWEEN MALIGNANT ENDOCARDITIS AND TYPHOID FEVER.

Malignant endocarditis is fairly often mistaken for typhoid fever. In many cases indeed it is only by resorting to the most modern methods of refined diagnosis that they can be certainly differentiated. In the early stages of malignant endocarditis enlargement of the heart cannot always be made out and a murmur is often absent or only occasionally present. Irregularity and rapidity of the pulse, especially when associated with changes in frequency without apparent cause would rather indicate endocarditis. The typhoid rash is distinctive when present, but it may not occur, or may occur very late. Likewise petechial hemorrhages would certainly point to endocarditis. Enlargement of the spleen may be present in both affections and the temperature charts of the two may be singularly alike. A continued fever with few symptoms is very apt to strongly suggest typhoid. However, a history of some infection at a recent date may serve to put us on our guard and lead us to consider malignant endocarditis.

The diazo-reaction points rather to typhoid, but has also been reported as occurring in endocarditis. The Widal reaction is of great value when it is present, but it is sometimes not obtainable until very late; nothing can be argued from its absence. A careful examination of the blood will throw much light upon the question. In malignant endocarditis we shall usually find a decided increase in the leucocyte count. It is true that in a few cases the number of leucocytes is but slightly, if at all, increased, but in these cases we shall find a relative increase in the polymorphonuclear leucocytes. On the contrary, in typhoid fever the leucocytes will generally be diminished in number and there will be a relative increase in lymphocytes. Besides, we may expect a much greater reduction in the number of red cells in malignant endocarditis than is generally found in the first weeks of typhoid fever.

The diagnosis of typhoid can be absolutely established, of course, when the bacillus typhosus can be cultivated directly from the blood, urine, or feces, as is now sometimes successfully accomplished by skilled bacteriologists. Similarly, the diagnosis of malignant endocarditis can often be confirmed by withdrawing blood from a vein under the strictest aseptic precautions and inoculating culture media therefrom. Failure to obtain a positive result is of little value unless the process be frequently repeated. According to Kelly, "The bacteria most frequently found are the staphylococcus pyogenes aureus, streptococus pyogenes and diplococcus pneumoniae-bacteria that we might expect when we recall that acute endocarditis is most frequently associated with pyococcic infection (pyemia, septicemia, puerperal infection, wound infection, abscesses, osteomyelitis, erysipelas, etc.), croupous pneumonia, meningitis, etc. In other cases, however, the following bacteria have been found: Staphylococcus pyogenes albus, the pneumobacillus of Friedlander, the typhoid bacillus, the tubercle bacillus; the diphtheria bacillus and the gonococcus. The following bacteria that, as far as we know, are unassociated with other diseases have been found also in endocarditis: Bacillus endocarditis griscus (Weichselbaum and Netter), micrococcus endocarditidis rugatus (Weichselbaum), micrococcus endocarditids çapsulatus (Weichselbaum), bacillus immobilis et foetidus (Fraenkel and Sanger), bacillus pyogenes foetidus (Passet), the bacillus of Gilbert and Lyon, diplococcus tenuis (Klemperer), micrococcus zymogenes (MacCullum and Hastings), bacterium coli commune, and a few others. In certain cases the endocarditis is the result of a mixed infection—cases in which more than one organism is isolated from the heart lesions, and cases complicating certain well-defined infective diseases from the heart lesions of which a micro-organism is isolated that evidently has nothing to do with the original infection, as, for instance, the isolating of streptococci and staphylococci from the heart lesions in cases of typhoid fever, diphtheria and gonorrhea. These cases have been designated heterologous in contrast to the case of monoinfection designated homologous."

CAUTION NECESSARY IN THE TREATMENT OF MEASLES IN TENEMENTS

Measles is regarded by many mothers who live in tenements as a very mild disease. They consider that warmth and exclusion of light are all that is required and that the services of a doctor are superfluous. The result is that the patient is often put in a dark inside room which is overheated and insufficiently ventilated. His resistance is so much the more lowered, and he becomes specially liable to some secondary infection, most frequently bronchopneumonia, diphtheria, or tuberculosis. A patient with bronchopneumonia following measles who, in addition, contracts diphtheria is in a well-nigh hopeless condition. Yet this sequence does occur. We are cognizant of four intubations performed within the past two months for laryngeal diphtheria following measles.

In each of the four cases the doctor who was called in when the symptoms of croup became marked, attributed the condition to catarrhal laryngitis complicating measles, and did not administer antitoxin, or even make a culture until the severity of the symptoms made operative intervention imperative. It should be kept in mind that symptoms of croup occurring during measles may not be due to catarrhal laryngitis, but to diphtheria. If the symptoms are at all severe, a large dose of antitoxin will certainly be on the side of safety.

VACATION SEASON

At this season of the year when physicians are trying to get away for a fortnight or so for a vacation, perhaps no place in this country would appeal to them more than northern New York, and more particularly, the 1000 Islands at Alexandria Bay. No resort in the north is quite so attractive. In many ways, it is ideal for those in search of rest and recuperation. The 1000 Island House, located on the old St. Lawrence in the heart of the Thousand Islands at Alexandria Bay in Jefferson County, New York, is certainly the most enhancing spot in America, where nature's charms are rarest and all the delights of modern civilization are added to the many attractions of the 1000 Island House. Perhaps no resort hotel in this country provides greater living facilities, or such luxurious comfort, **real home comfort,** as does this palatial Summer resort, located in a region destined by nature for the recuperation of man, where the sun shines brighter, where the air is more balmy and yet bracing, where the pulse beats more strongly, making one feel that life is worth living. Here the invalid can rest out of doors, the artist or poet can find inspiration from grand old nature for his best efforts. The business man can enjoy fishing, boating and recreation. The tired woman finds relief from her work which is never done, and soon feels renewed health and strength. Nature's surroundings and the environments of this palatial hostelry make an ideal combination for Summer recreation. There are opportunities for fishing, boating and similar sports. The culinary department is under the supervision of an experienced chef, who is an artist and past-master in the preparation of viands to satisfy the gustatory sense, and his fish dinners have attained the very pinnacle of gastronomical pleasure.

This spot was the "Border Land" between the two great Indian Nations, the Algonquins and the Iroquois, and amid these scenes Hiawatha built his magic canoe and counselled the League of the Five Nations. The closing events in Cooper's fascinating story, "The Pathfinder," took place on one of these islands and here Tom Moore wrote his Canadian Boat Song.

At Alexandria Bay the tourist is in the midst of many places of historical interest. With a motor boat he may visit the old Jesuit Mission of La Presentation or its nearest outpost on Chimney Island, where the remains of the old blockhouse may be seen. He may spend a day in the forts at Kingston, which has been since the days of Frontenac one of Canada's strongholds, or he may inspect the old military works on Carleton Island. He may sail his boat through the "Lost Channel," which gains its name from an incident in the French and Indian War, where a small boat and its crew from Lord Amherst's Fleet disappeared never to be seen again. He will surely want to visit the "Devil's Oven" where the brave Kate Johnston brought food and cheer to her outlaw father while he was in hiding after taking part in the burning of the British ship "Sir Robert Peel."

PEDIATRICS

ORIGINAL ARTICLES

HEALTH SUPERVISION OF SCHOOL CHILDREN*

BY GEORGE P. BARTH, B.Sc., M.D.

That Medical Inspection or, probably as it should be more properly called, Health Supervision of School Children, is of vast benefit in and during the process of educating children so that there may be secured ultimately for every child, normal or defective, conditions of life compatible with that full and effective development of its organic functions, its special senses and its mental powers, which constitute a true education—to quote from a Memorandum of the British Board of Education—is no longer doubted among those who have studied the question. That it should also be a department of school administration in the larger cities at least and in states is also granted, as evidenced by the fact that it is so administered in about 75 per cent. of cities.

The report of the Committee on Medical Inspection of Schools of the American Medical Association has set a high standard for departments. The report, June, 1911, gives the purposes of the work as follows:

1. The establishment of biennial, annual and, when necessary, more frequent skilled physical and developmental examinations of pupils and students by a staff of experts. The establishment of initial examinations of pupils by the teaching force of the schools, as far as the teaching force is qualified, prior to the skilled examinations by experts.

2. By effective action, based on the data of these examinations to secure (a) The correction of physical anomalies and thus remove the growth barriers of children and youths, and (b) whenever possible and practicable to adjust educational activities to meet the requirements of physical and mental health, growth and development, and thus establish a special

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*Read before the Milwaukee Medical Society, April 11, 1916.—The Wisconsin Medical Journal.

field of education for the maintenance of continuous health and development by supervision of pupils and students.

3. To maintain a scientific and systematic study of mental retardation and mental deviation of pupils and students by skilled examination, and whenever possible and practicable, by skilled training in special schools.

4. To establish skilled physical and health examinations of candidates for teachers' positions prior to their selection to determine vital fitness for their work, and thereafter to maintain continuous supervision of health and efficiency to teachers as related to the work of the schools.

5. (a) To organize and supervise courses of technical instruction in hygiene for pupils, students and teachers, in the means of conservation of physical and mental health, growth and development; in the means of correction and prevention of defects, diseases and degeneracy; (b) whenever necessary for efficiency, to give practical and technical instruction to the teaching force of the schools, while engaged in teaching, in the initial physical and developmental examination of pupils; in the skilled physical and developmental and psychoclinical examination of exceptional pupils, abnormal and supernormal.

6. To establish and maintain well-equipped medical, anthropometric and psychoclinical laboratories in the public schools which shall afford opportunity and equipment—

(a) For sufficiently skillful medical, anthropometric and psychoclinical examination of exceptional pupils and of all pupils requiring special examination.

(b) For such technical training of teachers in the laboratory and experimental phases of educational work, connected with the physical and mental examination of pupils, in clinical psychology and in experimental pedagogy as is essential for the intelligent handling of pupils.

(c) For essential work in hygiene and sanitation.

7. To exercise expert sanitary supervision in the planning and maintenance of school buildings and grounds.

8. To bring about the establishment of dental and medical clinics for pupils whose parents are financially unable to provide essential medical and dental aid.

9. Whenever possible and practicable, to co-operate with state, county and city health officials in the detection of and reporting of contagious diseases.

10. Each department of educational hygiene to constitute

a bureau of practical investigation and research in education hygiene, and as such to co-operate with state bureaus of education hygiene whose functions will or ought to be the organization and supervision of state-wide work and investigation in this special field of education—looking forward to the establishment of a national bureau of educational hygiene.

To meet these requirements would necessitate a large force of trained people. It is a standard toward which medical departments of school should strive however.

With respect to the first provision or physical examination, it is important that entrants or kindergarten children receive an examination. It has been the aim to examine firstly, the kindergarten children or entrants so that defects may be discovered in children as early in their school career as is feasible at present, and by a process of elimination, place those children in whom physical or mental defects would preclude approximately normal advancement in a class more suitable to their abilities; secondly, those who having reached the primary and secondary grades and find it impossible to keep up; thirdly, those who through physical or mental disability did not enter school at all or were compelled to stop school attendance by intercurrent disease.

The subjoined statistics will show in some measure the percentage of occurrence of some of the physical defects from which school children suffer. Of course, it must be understood that these figures are not absolutely accurate in all respects, due to the necessary provision that clothing is not removed, except in doubtful cases and then only in the presence of parent or guardian. Thus some of the more obscure lesions will fail of detection.

Total Physical Examinations	103,358	
No. Treatments Recommended	12,225	11.7
Hyper Tons	20,481	19.7
Adenoids	2,064	1.99
Defective Nasal Breathing	1,850	2.75
Defective Teeth	61,989	59.9
Defective Vision	13,549	21.9
Defective Hearing	546	.528
Respiratory Disease	398	.394
Cardiac Disease	890	.861

The physical examination blanks of this city provide for nine annual examinations, thus following the child through its school course, but with a staff of ten physicians to fifty-six thousand children annual examinations were not possible. The defect is recorded on the face of the blank and on the back of the blank the recommendations of the examiner as to treatment and whether such treatment has been received, or whether the parents refuse to provide treatment, and if the defect does not admit of cure, advice as to the future handling of the case, e. g., a valvular heart lesion and indulgence in competitive athletics.

In securing results not only in the correction of physical defects and also in acute conditions such as skin and eye lesions, proper care of acute infectious diseases and in countless other conditions affecting the health and welfare of children, an efficient follow-up system by means of a well-trained nursing staff is essential. Each consultation with the child in school, each visit of these devoted women to the home constitutes a lesson to the family in physiology and how to live. This is no mean factor, as shown by the monthly record of visits to the homes, school consultations, visits to the dispensary, etc. It is largely through them that the department is able to maintain the close relationship with charity and relief organizations. hospitals, and dispensaries so necessary in order to provide relief to the necessitous.

One of the greatest difficulties with which the department has had to contend is the lack of dispensary and hospital facilities. This was compensated for to a degree, however, by the ready willingness of the physicians and dentists of the city in accepting patients without pay when recommended for free treatment by the department, and to these we extend our thanks.

Milwaukee is well in the van as far as providing means of education for those requiring special equipment and educational facilities, but much remains still to be done. Thus we have classes for defective vision, classes for the deaf and dumb and defective hearing, for mentally deficient, for defective speech, one open-air class, but provision for more is under way, crippled children who are unable to attend school are being taught in their homes.

And this leads me to say a few words on vocational guidance.

Where physical or mental defects, or both, in a child make it reasonably certain that the child will not be able in the future to compete with other members of society in gaining a livelihood it seems to me that it is well within the province of the Board of Education to provide instruction in some industrial art compatible with the capabilities of the child in question. This applies particularly to the crippled. In the issuing of working permits, it seems to me that a physical examination should precede such issuance. A permit limiting the kind of place and work would probably save some lives to the state by preventing a child subject to bronchitis or asthma from working in a dark and dusty place, an epileptic from proximity to dangerous machinery, etc., etc.

Of course, vocational guidance means more than this, and a beginning has already been made in the establishment of boys' and girls' trade schools and continuation schools.

One of the questions which promises to be more vexatious in the future than it is even now is the mental defective in the schools. As an educational problem purely and simply it resolves itself upon the proper diagnosis, treatment and classification of those in school who are exceptional or mentally different from the usual student and the provision of a curriculum which will meet the capabilities of children with the ultimate view of making them useful citizens as far as this is possible. The former—diagnosis, treatment and classification—may well be left in the hands of the psychologist and educator.

The Department of School Hygiene has always maintained a close co-operation with the Health Department of the city, the departments exchanging reports daily. The school doctors and nurses are governed by the following rules with respect to the control of infectious diseases:

"When a positive diagnosis of a reportable infectious disease is made in a school, the name and address of the pupil must be reported to the Health Department and the Central office by telephone before leaving the school, and the child excluded forthwith.

"All cases of infectious disease coming under the observation of the inspector, which are not properly safeguarded, shall command his attention. Proper instructions are to be given to the family and the matter reported to the Health Department. All suspected cases of infectious disease which might have an influence on one of the schools are to be investigated by the inspector in charge of the district and action reported to the Chief Medical Inspector."

The Attendence Department and the Hygiene Department working hand in hand, it is almost impossible to conceal an infectious case.

As far as I know, no department has as yet succeeded in controlling the so-called minor diseases of childhood, to-wit: Measles, Chickenpox, Pertussis and Mumps, because of the great difficulty in making an early diagnosis.

I am prone to believe also that the more strict supervision of the case by the parent owing to the discovery and prompt correction of neglect by the watchfulness of the school nurse has resulted in a greatly reduced number of defects due to sequelae and complications.

CARE OF MILK IN THE HOME*

The three "C's" for the proper care of milk in the home according to the dairy specialists of the United States Department of Agriculture, are:

Keep milk Clean, Cold and Covered.

Milk is a highly perishable food and the length of time it will remain sweet and safe, especially for children, depends, the specialists say, almost entirely upon the constant care it receives from cow to consumer. Milk passes through three agencies—the producer, the dealer, and the consumer. If the first two have done their part, clean, safe milk will be delivered, thoroughly chilled, to the consumer. The consomer's responsibility begins the moment the milk is delivered at his doorstep

Because milk poured from vessel to vessel on the street is very liable to contamination from dust, manure particles and germs, milk is best delivered in capped bottles. If bottled milk can be obtained, the housewife should try to have someone in the family receive the milk in a clean, scalded utensil, cover it immediately and put it without delay into the refrigerator, or the coldest available place. Under no circumstance should an uncovered pitcher, bowl or pan be left out on the porch to receive bulk milk. The vessel, both before and after the milk is poured into it, is accessible to flies and collects particles of dust and dirt.

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*Farmers' Bulletin No. 413, U. S. Department of Agriculture.

Even in the case of bottled milk, however, the consumer must see that the bottle is not left out in the heat for a moment longer than is necessary. Milk should be delivered and kept at a temperature of 50 degrees F. or lower — the colder the better. At such temperatures bacteria develop very slowly and milk undergoes little change until consumed. A slight rise in temperature above this point, however, permits bacteria to multiply rapidly and brings about rapid deterioration of the milk, which may render it unfit for ordinary use and make it highly dangerous for babies and little children. For this reason bottled or other milk should not be allowed to remain in a warm place, as on a sunny porch or in a hot kitchen, for a moment longer than is necessary.

Delivery of Milk in Hot Weather.—In hot weather the best plan is to have the milkman put the milk directly into the refrigerator, because at that time of year milk cannot be kept properly without ice. If a refrigerator is not available, provide a small box containing ice, and if ice is unobtainable, provide some tight container with insulated walls that keep the heat from getting rapidly to the cold milk. A home-made fireless cooker is admirable for this purpose, especially if partially filled with ice. In the absence of any of these devices, arrange with the milkman not to leave the milk in the sunlight, but to put it in the coolest, shadiest place around the house.

Handling Milk in the Home.—In handling milk around the home, do not pour it from one vessel to another until it is to be consumed. Do not let the bottle of milk remain out of the refrigerator a moment longer than is necessary. Keep the milk covered, using paper caps or an inverted tumbler on bottles, or storing it in uncovered utensils. Any household utensil that is to be used as a vessel for keeping milk should first be cleaned thoroughly and scalded.

Before opening a bottle of milk, wash and wipe the neck and outside of the cap with water and a clean cloth. The little depression on the top of the cap may collect dust or water and any milk that leaks may attract flies. Lift out the cap with a pointed instrument, so that the outside of the cap, which may be contaminated, will not be pushed down into the milk. Each time the milk is to be poured from the bottle it is a wise precaution to wash the neck as described.

Milk in a Refrigerator.—The refrigerator where milk is stored should be cleaned regularly, especial care being given to keeping the dip pipe free and clean. The ice rack also should be cleaned, and any place where food is kept or milk stored should be scalded occasionally with sal-soda solution. The refrigerator, even though cold, may quickly be contaminated by a few drops of spilled milk, or by small particles of food. No matter how clean the refrigerator, milk should never be kept in an open vessel. As milk absorbs odors easily, such food as fish, cabbage, or onions should not be kept in proximity to it.

Clean Empty Bottles.—As soon as a milk bottle is emptied, rinse it thoroughly with cold water. Do not return dirty bottles and do not use milk bottles except to hold milk. Returning dirty bottles to the milkman may mean that a few days later either you or your neighbors will get contaminated milk. Milk bottles should never be taken into a sick room. In case of infectious or contagious disease, all bottles should be boiled thoroughly and should not be returned to the dealer without the express permission of the attending physician. Such diseases easily can be made epidemic through disregard of this precaution.

Where There Are Children.—Care of milk, important for all, is a vital necessity in a home where there are children. It is absolutely essential to the safety of babies. No intelligent mother will leave to an ordinary servant the task of caring for or preparing the milk for her baby. Mothers of small children should get, from their own physicians, explicit directions for the proper handling of milk and for cleaning and sterilizing nursing bottles. Pamphlets on infant feeding may be obtained from the municipal milk stations or health officers. Milk for babies cannot be kept too cold, and too much care cannot be given to keeping it clean and covered.

INFANTILE SCURVY*

BY ALFRED M. HESS, M. D.
New York City

Dr. Hess in discussing this subject said that infantile scurvy had assumed increasing importance since the use of heated milk for babies' food had become so common. For, although pasteurized milk was to be highly recommended, it should be realized that a scorbutic condition developed unless orange juice or other anti-scorbutic substance was also taken. This type of scurvy was found to be generally subacute; it took months to develop. In order to prevent a progressively negative balance of vitamines, antiscorbutics should be given much earlier than was the present custom. Orange juice or other corrective food should be added to the dietary at the age of one month.

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*New York Med. Jour., New York Acad. of Med., April 20, 1916.

Infantile scurvy was commonly regarded as a disorder characterized by malnutrition, by typical changes in the structure of the bones, and by hemorrhages in typical sites, occurring most frequently in the gums and beneath the periosteum, due not to a defect of the blood but of the blood vessels. These hemorrhages were attributable to a disturbance of the vessel walls rather than to a defect of the factors concerned in the normal coagulation of the blood. Hemorrhages into the gums or beneath the periosteum were the classical signs of infantile scurvy. In addition, careful examination frequently revealed involvement of the circulatory system. In some respects scurvy manifested symptoms which were characteristic of some of the other deficiency diseases; for example, the Roentgen ray might show enlargement of the heart, especially of the right ventricle, also found so often in beri-beri. The optic disc might show changes, indicating that the nervous system was involved in both of these disorders. Subcutaneous edema constituted a not infrequent symptom of infantile scurvy.

In the clinical symptoms were also anemia and occasional fracture of the long bones, pain, tenderness, and the general symptoms of malaise. Recently the Roentgen ray had added another sign to this category in the characteristic white line of Frankel, to be seen frequently at the epiphyseal ends of the long bones in the early stages of the disorder.

A group of infants in the Hebrew Infant Asylum was kept under close observation for many months, and had been fed the usual milk mixtures. The milk given was grade A, pasteurized, heated to 145 degrees F. for thirty minutes. The object of the investigation was to ascertain whether milk treated in this way underwent any essential change and whether infants could be made to thrive on it even when orange juice was discontinued. It might be remembered that the Commission on Milk Standards, in addition to approving pasteurized milk from a bacteriological standpoint, had stated that heating milk to this degree did not impair its nutritive properties. The speaker's experience, on the contrary, led him to conclude that unless some antiscorbutic substance, such as orange juice, was given, a more or less mild form of scurvy developed, which yielded quickly to simple dietetic treatment—changing to raw milk or once more adding orange juice or the juice of orange peel to the diet. In spite of the fact that the milk was of excellent quality, that the infants received food of high caloric value, and that in many instances cereal was also given, mild scorbutic symptoms developed in almost all cases within from two to three months.

Infantile scurvy had been brought into actual relationship in symptomatology and pathology with some of the other deficiency diseases, more particularly with beri-beri. These two diseases were commonly grouped together, merely because they had one factor in common—they could be cured by the addition of a definite food to the diet. Infantile beri-beri and scurvy were not, nevertheless, one and the same disease, for the characteristic symptom of infantile scurvy was hemorrhage whereas that of beri-beri was nerve degeneration.

In view of these facts and the clinical similarity between infantile scurvy and beri-beri, in their experiments it was decided to substitute for the farina a cereal containing the outer layer of the wheat. To this end middlings were obtained, the middle layer of the wheat grain, which might be compared to the pericarp of the rice. A cereal was prepared, consisting of two parts of middlings and one part of flour, and was given in place of the farina, and in the same amounts. The caloric value of this food was the same as that of farina, and it was taken quite as readily by most of the babies. No other change was made in the diet. In some instances improvement was immediate and striking; there was a gain in weight for the first time in many weeks, a brightening in the appearance and in the disposition of the infants, and a recession of the typical scorbutic symptoms. This improvement was maintained for some weeks. The effects, however, could not be compared to the miraculous change brought about when orange juice was given. The addition of middlings, which might be designated wheat pericarp, was not able to restore the infants to their natural vigor, even when it was given daily for a month or more. In some instances, especially when only a small amount of middlings was taken, no effect was observed.

In conclusion, the speaker emphasized the fact that infantile scurvy was readily cured by means of orange juice, even after this substance had been boiled. It was likewise cured by an infusion of orange peel which had been brought to the boiling point. Codliver oil had no effect in preventing its occurrence. Yeast, a sovereign remedy in beri-beri was found to be of no value as a cure, even in considerable amount. Wheat middlings, especially wheat germ, were found to have value as a prophylactic.

Scurvy affected growth, not only as measured by weight, but likewise by length. The latter disturbance emphasized the profound character of the nutritional disorder. Growth might, under certain conditions, progress normally during the development of scurvy which showed that stunting was not to be regarded as an essential characteristic of this disease. When an antiscorbutic was added to the diet, supergrowth was brought about, which might continue until the entire loss had been recompensated.

Dr. L. Emmett Holt had no doubt that scurvy was on the increase in this city, judging by hospital and dispensary experience, since pasteurized milk had become so generally approved. Pasteurized milk had many advantages, but boards of health which were extending its vogue seemed to ignore some of the unfavorable consequences of its exclusive use. There were advocates of pasteurized milk who asserted that if scurvy resulted from its use, the reason was to be ascribed to an incorrect formula, an improper combination of fat, sugar, and protein; but the fact remained, nevertheless, that babies fed exclusively on pasteurized milk now and then acquired scurvy. The exact reason for this was not known at present, but there were grounds for the belief that it was due to the effect of the pasteurizing process on the proteins in the milk.

The truth of Dr. Hess' contention, that it was necessary to add other elements to the diet of pasteurized milk for infants, was not yet as widely appreciated as it should be. The usual addition of cereals to pasteurized milk in no way prevented the development of scurvy; there seemed to be little doubt that combinations of starchy foods with preparations of maltose rather increased the liability. Orange juice might prevent the development of this danger; but the question was how large an amount was required. In one case scurvy had developed, although the child had received one ounce of orange juice a day for over one month. One half to one ounce daily should be sufficient for the average child. A law which made the pasteurization of all milk compulsory would be a calamity. The clinician should not be deprived of the privilege of using raw milk when he preferred to do so, provided that such milk was known to be produced under safe conditions.

It was probable that many cases of scurvy were overlooked at the present time. Ten or fifteen years ago very few advanced cases came to the hospital for treatment, but within the past few months the speaker had two cases so advanced that epiphyseal separation had taken place at shoulders, knees, wrists and ankles. While he fully appreciated the advantages of pasteurized milk, its disadvantages should not be forgotten, and infants who were reared upon it should have some antiscorbutic added to their food.

Dr. Warren Coleman wished to take up only one point. The papers of Doctor Funk and Dr. Hess opened up a wide field for speculation and investigation, but one of the most interesting phases of the vitamine problem for the clinician was the question whether the diets used in the treatment of any of the commoner diseases were deficient in these important substances. There was no well known disease of adults occurring in this latitude, which was recognized to be due to the lack or insufficiency of vitamines. Yet it was not impossible that ill defined types of disorders, now thought to be disturbances of function, or some of the symptoms of well established diseases, might have this origin.

This contention seemed justified by observations in typhoid fever cases. For example, the very course of the disease had been altered by giving patients all the food they required instead of only part of it. Diarrhea should no longer be considered a symptom of typhoid, except perhaps in the prodromal stage; it was the result of an improperly arranged diet and disappeared when the diet was properly arranged. Delirium and the typhoid state were not essential symptoms of the disease. Delirium might occur, but when it did it was due either merely to the fact that temperature was elevated beyond a certain height for a particular individual, or to the elevated temperature plus partial starvation.

If in such well known disease as typhoid fever such prominent symptoms could once have been considered essential symptoms of the disease, only to have been removed by proper diet, it brought up the question of other diseases, and if some of their symptoms might not be due to deficiencies in diet. Attention should be directed to this point, however, that the so called bland diets of the textbooks ordinarily consisted of foods with a high vitamine content, viz., milk and eggs and meat extracts (unless they had been heated too high).

VOMITING IN INFANCY*

BY J. EPSTEIN, M.D.
New York City

A proper diagnosis of vomiting in infancy may at times save the life of the infant. Leaving out of consideration the vomiting which is a part of the general symptomatology of various diseases and which may be diagnosed by the other symptoms and physical signs, there is a group of gastric disturbances in which vomiting is the only or chief symptom.

Vomiting in infancy may be the result of: (1) Improper feeding. (2) Improper food. (3) Congenital pyloric stenosis. (4) Rumination.

Improper feeding is the cause of vomiting in a large number of infants. The diagnosis is easy and can be made from the feeding history. These infants whether breast-fed or bottle-fed get the right kind of food but are fed in the wrong way. They receive either too much food at a time or too frequent feedings, with the result that the stomach is filled to overflowing, and the consequent gastric regurgitation or vomiting. These infants have no digestive disturbances, they simply retain as much food as they need and eject the rest by vomiting. To treat such a condition with drugs is worse than useless. Strict directions in writing must be given to the mother or nurse as to the exact number of feedings in twenty-four hours, and the regular intervals. While there is no absolute means of telling exactly how much food each infant requires at each feeding and how frequently it must be fed in order to supply it with sufficient calories for all its needs of energy and growth, the age, weight, digestive capacity, and general condition will aid in determining the quantity of food at each

*Medical Record.

feeding and the number of feedings in twenty-four hours. The following simple practical rule though not exactly scientific is very useful, especially to the general practitioner, in the feeding of healthy infants. An infant should get at each feeding as many ounces of food plus one as it is months old; that is, a baby three months old will take four ounces of food at each feeding, and one four months old five ounces of food. The intervals of feeding may for practical purposes be as follows:

From 1 to 3 months old every	2 hours
From 3 to 6 months old every	3 hours
From 6 to 9 months old every	3½ hours
From 9 to 12 months old every	4 hours

After six months of age an infant should get other food besides milk. Orange juice, well cooked cereal, beef juice, and zwieback may be gradually added.

In bottle-fed infants the correction of faulty feeding is very simple because the mother or nurse can easily regulate the quantity of the food at each feeding and the number of feedings according to the directions, but in breast-fed infants the mother can nurse the infant at regular hours, but she cannot tell how much the baby takes at each feeding. For general practical purposes, the weight and the condition of the infant afford the simplest and best guide to the amount of food the baby is getting in twenty-four hours. A large overfed infant tells its tale that it takes too much food for the size of its stomach and therefore vomits the surplus. The remedy, of course, lies in cutting down the time of each feeding. A more exact method consists in weighing the infant before and after nursing, and in this way gain a knowledge of how much food it takes at each nursing. Knowing the number of ounces of breast milk the baby requires at each feeding, the nursing time can be regulated so that the infant will take as much food as it needs to thrive upon and no more. While this method of weighing before and after nursing is exact and scientific, it is not practical. The general condition of the infant and its size and weight are in many cases sufficient.

Improper food is a frequent cause of vomiting in infancy. The quantity and the intervals of feeding may be right, but the quality of the food or the amount of its different constituent elements may not be suitable to the infant's digestion. Impure milk, or milk which is not kept at the proper temperature, or too much fat or protein or sugar may so irritate the stomach that the baby will reject the food by vomiting, and this, when long continued will cause gastric or gastrointestinal indigestion with other sympoms and signs of ill health. The treatment of vomiting from improper food is more difficult than that of vomiting from improper feeding. In cases of faulty feeding all that is necessary is to regulate the quantity and the hours of each feeding, for there are probably no chemical or anatomical changes in the stomach. The baby simply spills the excess of food from its stomach by vomiting. In feeding with improper food for some length of time there is usually a chronic gastritis or gastric indigestion with abnormal changes in the chemistry or the anatomy of the stomach. The treatment, of course, consists in giving the right kind of food. If the infant is breast fed an analysis of the milk should be made, and the result of the analysis will largely determnie the line of treatment. In bottle-fed infants fresh, raw certified milk should be given, beginning with a weak formula and small quantity and gradually increasing in quantity and strength till the infant gets the proper food suitable for its age and digestive ability. The stomach should be washed every day or every other day with plain warm water or a weak solution of sodium bicarbonate. In the majority of cases the infant will get well in a short time under this treatment without any medication. Should medication become necessary an initial dose of some mild laxative may be given. Bismuth subcarbonate in fairly large doses three or four times a day a half an hour before nursing will soothe the irritated gastric mucosa.

Congenital pyloric stenosis or congenital hypertrophic stenosis is not an infrequent disease, and upon an early correct diagnosis may depend the life of the infant. Though this congenital lesion was long known, it did not receive general medical attention till within recent years, when its frequency and importance become better appreciated. The diagnosis of congenital pyloric stenosis is not difficult and can always be made on the following three chief symptoms and three chief signs:

The three chief symptoms are: (1) Persistent projectile vomiting. (2) Persistent constipation. (3) Persistent loss in weight.

The three chief signs are: (1) Visible gastric peristalsis. (2) Palpable pyloric tumor. (3) Gastric retention of food.

The history of these cases is always very suggestive. The infants are healthy at birth, may be breast or bottle fed, frequently of the male sex, and the first born. The vomiting may begin at any time from a few days to three months old, but in the majority of cases from three to six weeks old. The treatment may be medical or surgical. Since in every case of congenital pyloric stenosis there are probably two factors present, pyloric hypertrophy and pyloric spasm, medical treatment may be directed to the spasm. This consists in feeding small quantities and at longer intervals with human or modified cow's milk low in fat. Sodium bicarbonate or potassium citrate may be added to the food or given before each nursing. Daily gastric lavage is very beneficial. In the majority of cases, however, surgical treatment gives better results and should be advised before it is too late.

Rumination or merycism is a condition in which the food is regurgitated into the mouth in limited amounts and is again masticated and either reswallowed or ejected. It is uncommon in man, but is common in certain animals. It is probably due to a reverse peristalsis and is usually present in neuropathic children of neuropathic parents. A diagnosis can usually be made from observation of the patient who habitually regurgitates some food and after chewing it either swallows or ejects. The treatment of this form of vomiting is difficult. In some cases feeding with a thick food made up of some cereal well cooked with milk does much good. Water should be given between feedings. Gastric lavage may be beneficial.

222 East Broadway.

SOCIETY TRANSACTIONS

AMERICAN MEDICAL ASSOCIATION

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(Special Report to the Medical Record)

SECTION ON DISEASES OF CHILDREN

The Factor of Starvation in the Development of Acetonuria.—Drs. S. Borden Veeder and Meredith Johnston of St. Louis presented this communication. They emphasized the distinction that must be made between acetonuria and acidosis. Acidosis was now used in a more general way to designate a decrease in the alkali reserve in the blood. It was a question of practical value to the pediatrician to know how starvation influenced the acetone bodies in the urine. Observations were made on children of different ages and body weight. The diet on which they were fed before the period of starvation was one consisting of 40 or 50 per cent carbohydrates. It was found that the total quantity of acetone varied directly with the period of inanition. The total output when the children were not starved was 3 mgs. per kilo body weight. During the first twenty-four hours of starvation there was little difference in the output of acetone bodies, but there was an increased elimination during the second day. If the period of starvation extended over only one day, the output of acetone bodies on the second day returned to normal figures. In eighteen cases in which there was a second twenty-four-hour period of starvation the output of acetone bodies increased from 20 to 410 mgs. per kilo body weight. On the day following the second day of inanition the output of acetone bodies was less than on the second day. In febrile and toxic conditions the figures were high. but not as high as during inanition. Folin and Denis had found that obesity was not a predisposing factor in increasing the total output of acetone bodies. The writers had made observations on children well nourished and found no relation between the degree of acetonuria and the degree of inanition. All the children were closely watched for clinical symptoms, particularly with reference to the symptoms of acidosis in childhood, but there was not a single child that appeared to be affected in any way, save for hunger, by the lack of food. It seemed safe to conclude that starvation could not be the cause of the symptoms of acidosis.

Dr. John Lovett Morse said it seemed that after listening to these papers there were certain points which the practitioner might carry away with him. One of these was that the presence of acetone bodies was not proof of disease, and, vice versa, that the absence of acetone bodies was not proof that there was not an acidosis. If starvation caused the presence of acetone bodies in the urine when one was giving a child to starvation treatment, he could not tell whether the acetone bodies were due to the starvation or to the disease. Acetone bodies might be found in all the conditions of childhood accompanied by fever. It seemed that the physician must learn to examine the blood for acetonemia and not trust to the presence of acetonuria. When they had all learned to tell whether a patient had acidosis by the examination of the blood they were still confronted by the fact that acetonemia was not a primary condition, and before they could treat this condition satisfactorily they must find its underlying cause. Newspapers reported an epidemic of acidosis in Boston last winter. In most of these cases the urine was never examined and in some cases in which it was examined no acetone bodies were found. It seemed impossible to have an epidemic of acidosis, because acidosis was a secondary and not a primary condition. It had been his experience that a careful examination showed that these children had something else. There were places in New Hampshire where there were a great many cass of severe illness in children. The only thing found in these children outside of vomiting was the change in respiratory excursion and a diminution in the amount of urine. In these cases large amounts of acetone bodies were found in the urine. The large majority of these children got well, but some of them died. One could not deny that these were cases of acidosis. In cases presenting these symptom the complications had all shown a bacteriological infection of the blood and a local focus of infection.

Dr. Charles Gilmore Kerley said he thought this subject was one of the most important that would come before the section at this meeting. He had been trying for five or six years to correlate these cases, showing a recurrent symptomatology. They found cases in which there was a distinct acetonuria and cases in which there was a distinct acidosis; it was not these but the border-line cases that gave the most difficulty in the attempt at classification. The type of case that showed the acetonuria were the children fed with too much milk. The majority of children of runabout age received too much fat and too much sugar. These were the children that showed acetonuria and high fever; about 60 or 70 per cent of them showed acetonuria; a smaller percentage of cases of pneumonia, scarlet fever, and other conditions accompanied by a fever also showed acetonuria. In these children the power of assimilation of carbohydrates seemed to be held in abeyance and acidosis resulted. Dr. Kerley cited three cases of acidosis in which there seemed to be no definite complications.

Dr. John Jahorsky of St. Louis asked how the clinician was to distinguish these cases of acidosis from cases of gastrointestinal intoxication without having the tests accurately carried out. He wanted to know whether the hyperpnea could be depended upon, and when this was present whether it was better to give sodium bicarbonate. Should these cases of gastrointestinal intoxication be treated in the old way by barley water, saccharine water, etc., or should one begin right away giving large doses of bicarbonate instead of calomel?

Further Study of the Amino-Acid Content of the Blood.—Drs. C. J. Pettibone and F. W. Schultz of Minneapolis presented this paper, which was read by Dr. Schultz. He reviewed the literature with reference to amino acids, which showed that the amount of amino acids in the blood varied widely, but there was little to show what relation the amount of amino acids in the blood might bear to various pathological conditions. The normal amount of amino acids per 100 c. c. of blood in infants was about 4 mgs. To find out what the variations from normal might be, a series of sixty children were studied, varying in age from one month to thirteen years. Among the pathological conditions present in this series were diphtheria, scarlet fever, bronchopneumonia, tuberculosis, atrophy, a number of nervous dsorders, nephritis, rachitis, encephalitis. tonsillitis, and a number of other conditions. The blood examined was taken from the median baslic vein and the estimations were made by the method of Van Slyke and Meyer, 2 to 5 c. c. of blood being used. The analyses were made one-half hour after taking the blood. The figures ran lower for children than those of Van Slyke and Meyer for adults. In the diseased conditions the figures did not seem to differ from those found in health. There was no increase in the amino content of the blood in febrile conditions, as might have been expected; neither was there a decrease. There seemed to be no striking correlation between the amount of amino acid present in the blood and the length of time since the last feeding.

Symposium of Syphilis—The Frequency of Hereditary Syphilis.—Drs. Frank S. Churchill and R. S. Austin of Chicago presented this contribution, which was read by Dr. Churchill, who explained that the report on a series made by him in 1910, in which he found thirty-nine positive Wassermann reactions in a series of 102 infants, was open to criticism because at that time he had taken a number of weakly positive Wassermann reactions as positive when in the light of their present knowledge would not be accepted as definitely positive. Dr. Austin had nothing to do with that part of the work. The present study was based on an unselected series of 695 patients coming to the Children's Memorial Hospital Clinic from November 1, 1915, to June 1, 1916. They had now learned that a weakly positive Wassermann reaction might be obtained in many conditions other than syphilis, as yaws, leprosy, tuberculosis, eczema, and some acute infections. In order that statistics might be considered reliable, there were two factors requisite; they must be based on the observation of a large number of individuals, and there must be accuracy in diagnosis. To meet this latter requirement in hereditary syphilis the family history of the patient and the laboratory findings must be taken into consideration. Owing to the transitory positive Wassermann reactions in other conditions it was well to have the test repeated. They had found positive Wassermann reactions in forty-two cases of eczema, sometimes a single and sometimes a double Wassermann. After describing the technique used the author stated that they had divided their reactions into three groups according to the degree of hemolysis. A single postive Wassermann reaction was regarded as of almost no value from a diagnostic point of view. A double Wassermann with physical signs of syphilis, of course, clinched the diagnosis. In the absence of clinical signs it was well to have the test repeated. A triple Wassermann reaction even without physical signs of syphilis was fairly good proof of the presence of lues. While this series of cases was too few to warrant definite conclusions, they had found that twenty-three cases could be considered as syphilitic. Sixteen of these twenty-three cases gave a triple Wassermann reaction. Six of the twenty-three cases showed no physical manifestations of the disease and the diagnosis was only based on the triple Wassermann reaction. The cases that were not considered syphilitic were grouped in definite classes. In 640 of these 672 cases there was nothing suggestive of syphilis. There was a certain number of cases in which there was a doubt as to whether they were syphilitic, and these cases should be regarded as syphilitic, treated, and kept under observation, both for their own good and for the welfare of society. A study of the incidence of hereditary syphilis as found in the literature showed a wide range of results and varied from 2 to 14 per cent in Europe and in this country. In this series the incidence was 3.3 per cent, while in four of the largest studies made in this country it had ranged from 2 to 6 per cent.

The Clinical Course and Physical Signs in Hereditary Syphilis.—Dr. Abner Post of Boston presented this paper, which was read by Dr. Philip H. Sylvester of Newton Center, Mass. He stated that there was an amount of irreconcilable variation in the descriptions of infantile syphilis found in the literature. A difference should be made between the child that was syphilitic ab initio and the one rendered syphilitic after life had begun. Hereditary syphilis had been confused with congenital syphilis. Hereditary syphilis occurred in a great variety of clinical forms, and there was a difference between early and late hereditary syphilis. In the early form the child was usually emaciated, suffered from impaired digestion, showed an eruption of the bullus type, had cracked lips which might ulcerate, and enlarged liver and spleen. In contrast to this severe type all gradations of sypmtoms might be found. Some of the children appeared apparently healthy until they developed something that indicated the condition. Obstinate wakefulness might arouse suspicion, and was particularly likely to occur in cases in which the disease affected the bones. Another symptom was the nasal catarrh, often leading to the belief that adenoids were present. Operation in such cases gave no relief. The nasal passages were decidedly narrowed. Aside from the fact that operation gave no relief to the patient, there was the danger that the operator might be infected. It was difficult to form an estimate of the incidence of infantile syphilis, as it was quite customary to give marasmus as the cause of death on the death certificate of many children in whom syphilis was the cause of the marasmus. Syphilis showed a marked tendency to involve the lymphatic system; the enlarged glands of syphilis were often attributed to tuberculosis. In many subjects the skin was of a pale, sallow, yellowish hue. The eruption of hereditary syphilis was maculopapular. It usually was noticeable first on the heels and had a glistening appearance. There was sometimes desquamation. This condition might be observed on the palms of the hands as well as on the soles of the feet; it was also often found under the diaper. Other signs that were characteristic of early syphilis were shedding of the nails, thinning of the hair, and cranial exostoses. These latter were often attributed to rachitis. Other bone changes of syphilis might also be mistaken for rachitis, as osteochondritis. As to the treatment, salvarsan administered to the mother usually brought about a great improvement in the succeeding baby, but there still might be some stigmata of syphilis. It had been stated that in the case of twins one might show the stigmata of syphilis and the other not. Cases were cited which showed that a thorough search might often reveal the signs of syphilis in a child supposed to be healthy.

Comparative Studies of the Luetin and Wassermann Reactions.—Drs. L. R. DeBuys and J. A. Lanford presented this communication. They stated that in studying the symptoms of congenital syphilis they had found that there were not many classical symptoms. Moreover, it was important to recognize syphilis early in order to give the child the best possible chance in life. For this reason laboratory tests that could be depended upon were important. In making the Wassermann tests they had used the classical method of Wassermann which was described in the paper, and in making the luetin tests they had used the technique of Noguchi, carried out minutely. They had made 350 Wassermann tests and 159 luetin tests in 179 cases. Thirty old cases studied with the Wassermann reaction several years ago were included. The period during which the cases were observed varied from one month to five and one-half years. There were seventy-nine children, sixty-three mothers, and eight fathers. The children varied in age from twelve days to just under puberty. In sixty-two families more than one member was tested by both the Wassermann and the luetin tests. The latest reaction in a mother was twenty-four days, and in another instance only showed itself after fourteen days. In some instances in which the Wassermann test had been negative, after the luetin test was made and was positive the Wassermann also became positive. It seemed that in some instances active anti-syphilitic treatment brought out a positive reaction where the reaction had previously been negative. The most violent luetin reactions occurred in a mother and nursing baby in whom there were no signs of syphilis. It developed that the mother had been given potassium iodide, and the interesting feature in this case was not only the effect of the iodide on the mother but also on the nursing baby. In this study they had found that the luetin test was more reliable than the Wassermann. In eighty-one children and parents the readings of the luetin test were dependable. In four instances there was a negative luetin and a positive Wassermann, and it was believed that there was an error in technique in these cases, as they all occurred on the same day, and none of them was considered clinically as luetic. The positive luetin reaction was found in many instances in which the Wassermann was negative. It was also found that a positive luetin test ran regularly in families which was further evidence of the accuracy of this test. In the series of thirty old cases studied only by the Wassermann test, in which the luetin test had not been made, it was shown that thirteen out of twenty-nine would not have been recognized by the Wassermann reaction alone. It had also been observed that the Wassermann reaction varied from time to time, according to the activity of the disease. This was not the case with the luetin test. In concluding, the writers stated that the luetin test should not displace the Wassermann test, for the Wassermann reaction indicated the presence of anti-bodies in the blood. The luetin test showed the presence of syphilis even though it was inactive. However, the luetin test had the disadvantage that it was influenced by drugs, and again it should not be considered negative until sufficient time had passed to be sure that one would not have a late reaction.

Chronic Intestinal Disorders of Mechanical Origin in Children.—Dr. Charles Gilmore Kerley of New York presented this communication. He stated that he wished to change the title of his paper so that it would include the chronic disorders of the stomach as well as the intestines. Digestive disturbances might be grouped into those due to bacterial infection, those due to perverted function, and those dependent upon chronic appendicitis. Certain cases showing recurrent symptome of gastrointestinal disturbance, vomiting, fever, and sometimes respiratory symptoms, did not respond to the treatment that was usually effective in these cases. In seeking for the reason of his failure to treat these cases successfully he had resorted to the x-ray and this had opened up an entirely new field. Many of thee cases had shown intractable constipation or constipation alternating with diarrhea. The x-ray had furnished the explanation. In some instances an elongated sigmoid was found and in others a ptosis of the stomach; there were others again showing a partial pyloric stenosis. These cases were treated by massage, gymnastics, Russian oil, olive oil, or fluid extract of cascara. If he wished to administer a teaspoonful of cascara in a day he gave it in three doses and in that way obtained a better effect than though it was all given at once. Massage and physical therapy had been of the greatest aid in dealing with the constipation due to the long sigmoid. He regulated the diet by omitting white bread, crackers, and similar articles, and gave more green vegetables and fruits, except in cases in which there was diarrhea. In cases having a diarrhea he omitted the fruit and vegetables and gave boiled skimmed milk. These roentgenograms had demonstrated the possible dangers of enemas. The effect of the enema was to further irritate the bowel in these cases. The x-ray served the additional purpose of showing the parents just what was wrong with the child and made it easier to get their co-operation. When they were shown that there was an anatomical deformity they did not expect the child to be cured immediately. In many cases they had found that they were dealing with a ptosis. Ptoses in the adult were congenital or had their origin during child life. The child of five, six or eight years ate a large meal three times a day and with each meal drank two or three glasses of milk, being urged to do this by his parents very often. The result was the stomach had more food to carry than was suited to its carrying power and as a result the child got a ptosis. The cases having ptosis of the stomach wore a Dr. Aaron band, modified for children, and having a transverse ridge which supported the stomach. He also had these children rest on the right side after meals.

The vomiting, the asthmatic attacks, the eczema, the colitis, or the constipation had disappeared or been greatly helped in all of these cases by the recognition of the true condition and the treatment prescribed.

Roentgen-Ray Findings of Chronic Intestinal Disorders of Mechanical Origin in Children.—Dr. Leon T. LeWald of New York gave this demonstration which showed the conditions found in the cases which Dr. Kerley had described. The first series of pictures which he exhibited showed air that was present in the stomach of the infant normally. It was shown that when the baby was kept in a horizontal position the food in the stomach covered the esophageal opening so that this air could not escape; as a consequence it was forced into the intestines and caused colic. It was shown that if the baby was thrown over the nurse's or mother's shoulder an opportunity was given for the escape of this air. Roentgenograms of many of Dr. Kerley's cases were exhibited which showed the elongated sigmoid, or the ptosed stomach, or moderate pyloric stenosis. It was his rule to consider a case suitable for operation if no food passed through the pylorus at the end of an hour. He warned surgeons in doing a gastroenterostomy to always be sure that they had closed the pyloric end of the stomach. He had seen several cases in which a fatal pneumonia had resulted from neglect in this respect. The fact should be emphasized that ptosis was not a matter of anatomy but rather of function. Two instances of syphilitic lesions of the stomach were shown and Dr. LeWald said it was becoming very evident that many visceral lesions were of syphilitic origin, not only gumma but interstitial changes. Operations that had been suggested as corrective of the elongated sigmoid were an anastomosis between the cecum and the sigmoid or a resection of the proximal portion of the sigmoid.

Dr. Henry Dwight Chapin of New York said he had presented a paper on this subject at the Minneapolis meeting and had shown a series of x-ray pictures to demonstrate that the sigmoid flexure of infants was a very much larger and more complicated structure than was believed. There were several cases in which the sigmoid went above the umbilicus; in other cases it formed a figure eight and was very mobile and very large. These showed the utter uselessness of high enemata to babies. One could not pass a soft catheter into the sigomid flexure of a baby, so we might be coming to a point where we could stop annoying babies by trying to pass a tube. If the tube was introduced two or three inches and the bag was placed about two feet above the baby's body one could wash out the whole large intestine, if the solution was allowed to flow in slowly.

Obscure Fever in Infancy and Childhood.—Dr. Edgar P. Copeland of Washington, D. C., presented this paper. He stated that in considering fever of obscure origin one must bear in mind the structural and functional immaturity of the heat regulating mechanism. in every sense comparable to the immaturity of other systems in early life. The effects of such deficiency, invariably present to a greater or less extent in the very young, varied greatly, always being more pronounced in those individuals exhibiting other evidence of the unstability of the nervous system, as expressed in convulsive attacks, tetany, etc. Under such conditions the responses to varied stimuli manifested themselves as unusual disturbances of body temperature. The recognition of these facts, however, did not obviate the necessity of the most diligent search for those definite pathological conditions giving rise to obscure fever in early life. The writer called special attention to dental caries as a cause of obscure fever and stated that middle ear diseases was also frequently a cause of fever, which might be overlooked by the most competent aurist, because middle ear disease might be present which could not be detected by inspecting the ear drum. It would sometimes be found that there was drainage from the middle ear into the pharynx when nothing could be seen by the ordinary aural examination. There might be an unsuspected infection of the tonsils which caused fever and in his opinion such an infection was more often the cause of obscure fever than was generally supposed.

Dr. F. M. Pottenger of Los Angeles said he thought that the cases of obscure fever reported gave the syndrome of toxemia and the fever was part of the sympathetic disturbance. The toxemia might be produced by proteins broken up in the body. Proteins might be divided into poisonous and nonpoisonous. It had been shown that a fasting animal got fever if protein was administered to it. This was illustrated by the fact that in typhoid fever, when after fasting the patient was given milk, there occurred a protein poisoning and a rise in temperature. The depressive emotional states did the same thing as toxemia through the action of the sympathetic nervous system which caused a vasomotor constriction.

Dr. T. C. McCleave said he had been interested in what had been said about the tonsils because he had had difficulty in getting the throat men to remove tonsils. The throat men did not know a great deal about the relation of general pathology to the condition of the tonsils; the pediatrician was a better judge as to the advisability of removing the tonsils.

Dr. Abraham Jacobi said that in very few of these cases was it the tonsils that were at fault; even large tonsils were not at fault. The fault lay with the rest of the pharynx, the lymphoid bodies that surrounded the antrum and were between the nares and the throat were more often the cause of fever and toxic symptoms than the tonsils themselves. It had been his teaching that the nose must be kept clean, not by an atomizer but by irrigation. In giving irrigations emphasis must be placed on the danger of snuffing, a neglect to warn against snuffing might result in middle ear trouble.

Dr. St. George T. Grinnan of Richmond, Va., called attention to the possibility of having obscure fever as the result of over exercise. In certain children a blood examination might show a leucopenia and a low hemoglobin percentage. He cited such a case in a child in which rest in bed for two weeks effected a cure.

Dr. John Lovett Morse of Boston called attention to a great lack in our knowledge in that we did not know what were the normal variations of temperature in childhood. Again one had to be sure the thermometer was right before he said that a child had fever. As to the dental caries as a cause of fever, many dentists were two generations behind the time. A child might have an infection of the teeth and yet look all right. Teeth that were filled might have abscesses at their roots which were not suspected until the x-ray revealed their presence. The ears as a cause of fever must not be ruled out because the drum looked normal; one must remember that the child might have disease of the ethmoid cells or the antrum that might be the cause of symptoms. Nothing had been said about the urinary tract, the possibility of an infection here being the cause of fever must not be forgotten.

Report of Five Cases of Tertian Malaria Treated with Organic Synthetic Arsenic Intravenously.—Dr. Frank C. Neff of Kansas City, Mo., presented this report. He stated that synthetic arsenic had been given with satisfactory results in malaria of the tertian type but that it had little effect in the other types of malaria. He related the history of five cases showing a similarity in that after the administration of the diarsenal the plasmodium had disappeared from the blood. He gave doses of two or three decigrams of diarsenal and after two or three injections found that the plasmodium had disappeared. Several of the cases were not followed up; in others there has been a recurrence of the organisms and the treatment had to be repeated. There were no reactions that would contraindicate the use of salvarsan or neosalvarsan. While these agents had caused the disappearance of the organisms from the blood no conclusion could be drawn as to the permanence of the cure. Perhaps permanent results might be produced by different methods of administration or by the use of this treatment together with quinine as an adjuvant.

The Use of Boiled Milk in Infant Feeding.—Dr. Joseph Brennemann of Chicago read this paper. He stated that the use of boiled milk in digestive disturbances was quite general and if it was good for the sick baby there seemed no reason why it should not be good for the well baby. The advantages of boiled milk were both bacteriological and physiological. The bacteriological advantages were understood by all. The physiological advantages depended upon the difference in the coagulability of the casein in boiled and raw milk. Boiled milk formed very hard curds which could only be broken up by peripheral digestion. In some instances the curds in raw milk were so large and hard that they could not be gotten rid of even by vomiting. One of the reasons for the good results obtained with eiweiss milk was that it formed almost invisible curds One never observed bad results in changing a baby from raw milk to boiled milk while the reverse was by no means true. The writer referred to the recent tendency to attribute all digestive disturbances in babies to the fats and carbohydrates in the food; he felt that the casein was also a factor in the production of symptoms of indigestion. The commercial pasteurization of milk was open to the objection that the milk was kept 24 hours after it had been pasteurized. Milk boiled at home was preferable to pasteurized milk; pasteurized milk might be considered as belonging in the raw milk class. If milk boiled at home was as popular as pasteurized milk there was every reason to believe that babies would suffer less.

The Use of Malt Soup Extract in Infant Feeding.—Dr. B.

Raymond Hoobler of Detroit read this paper in which he called attention to the failure of the prescribed formulae accompanying the various preparations of malt soup to meet many of the indications in infant feeding. One great fault of some of these formulae was that they called for wheat flour boiled but a very short time. The formulae for the use of malt soup extracts might be greatly varied by adding it to a well cooked cereal, not necessarily wheat flour, but any other cereal that seemed best suited to the case. The cereal should be cooked at least one-half hour. One could then select any kind of milk that seemed indicated, boiled, pasteurized, certified, or raw. The writer presented a number of formulae that illustrated how many of those for the use of malt milk might be made much more flexible, and he also explained the effect of different cereals with reference to fermentation and to the presence of different varieties of intestinal flora.

The Influence of Diet on the Development and Health of the Teeth.—Dr. Jay I. Durand of Seattle presented this communication which consisted of an investigation of the incidence of caries in the teeth of 5000 children with reference to feeding during infancy. The highest percentage of caries was found in those fed on sweetened condensed milk. He cited statistics based on an examination of the skulls of a number of the primitive races which showed that caries was very rare in those races in comparison with what was found in modern civilized races. For instance, dental caries in Maori skulls had an incidence of only 0.76, while the Maori child in a civilized environment showed an incidence of 15 per cent. The foods that predisposed to caries were the sweet, sticky carbohydrates. These should not be eaten at the end of a meal as they lodged in the crevices of the teeth and even a thorough brushing failed to entirely remove them. There they fermented and caused caries. The foods which cleansed the teeth and prevented caries were the hard foods that required vigorous mastication, and raw vegetables such as lettuce and celery.

The Regulation of Children's Diet After Infancy.—Dr. J. H. M. Knox of Baltimore presented this paper. He stated that the dietary needs of the infant during the first year of life were usually very carefully considered and in view of this fact it was rather surprising that so little attention was paid to the diet of children after infancy. But few studies had been made to ascertain the caloric requirements of the growing child at different ages or the relative amounts of the various food elements required for proper growth and development. It had been estimated that 100 calories per kilo or 45 per pound was the average requirement of a child one year old. Tables were presented which indicated the relative amounts of the various food elements required at different ages. After the first year of age the child could adapt itself to a wide variation in the proportions of the various food elements. These tables showed that as the age of the child advanced the amount of protein required decreased, and the proportion of carbohydrates increased. The quantity of fluid required varied widely and was dependent upon temperature, humidity, etc. The mineral requirements of the diet were usually fully met by the ordinary vegetable and cereal in the diet. The physician should be able to provide a well-balanced ration for a growing child and one that would be well digested. There was great danger of overfeeding growing children. A case illustrating the effects of overfeeding was cited, in which the child was getting 2500 calories per day, that was 150 calories per kilo body weight; the number of calories was diminished by one-half and the child rapidly improved in condition. Diet lists suited to children of various ages were presented together with a list of foods that could be used as substitutes for those given. The writer said he would not discuss the alteration of the diet in disease, but that by a careful adjustment of the diet in disease the child might be kept along without lowering the caloric value of its diet.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE

Eiweissmilch and its Adjuvants.—E. Glanzman (Jahrbuch. f. Kinderheil., Oct., 1915, Amer. Jl. Dis. Women and Children) says that the value of "eiweissmilch" depends on the presence of soapy stools. There are several groups of cases of this nature. In one group these stools occur with the presence of a large amount of alkaline earths and alkalies in the intestine, giving a dry, shiny stool. A disturbance of the metabolic balance takes place and there is a reduction in weight. Soapy stools are the cardinal symptom of disturbed metabolism. In one group of cases which show disturbed metabolism the addition of carbohydrates to the diet without any change in the concentration of the food will put an end to the soapy stools. In a second group the carbohydrates produce no improvement for presence of too much fat is another factor. The fat produces a strongly alkaline secretion of the intestinal walls and the large glands. We must seek to hinder fermentation of the carbohydrates by reducing the amount of whey. By reducing the whey the amount of fat is well borne though whey alone never causes soapy stools. Casein is another factor in the production of the soapy stool. In buttermilk we have, with a high concentration of whey, also a high relative and absolute amount of casein, which may lessen the stimulative fermentative influence of the whey. With increased concentration of the milk in a feeding mixture the influence of casein to prevent fermentation is increased over the ferment-stimulating whey. In an albumin-rich medium the fat tolerance rises in spite of the contained whey. From buttermilk enriched with cream is but a step to full milk. Constipation with soapy stools may occur under this diet. The high concentration of the casein is the cause of the constipation. In adding rennet to milk there is a splitting of casein into albumin whey and paracasein. When this precipitates large amounts of calcium phosphates are carried down with the fat. These paracasein calcium combinations act as catalyzers in the production of earthy alkaline phosphate fat soaps. A similar action takes place through an addition of inorganic calcium solution. An increase of albumin acts like an increase of fats. It causes an increase of alkaline albumin-rich intestinal juice. This medium nourishes a proteolytic flora and does not allow of the growth of fermentation bacteria. The fermentation is prevented by putrefaction of the intestinal juice. In another group of cases the soapy stools are prevented by reducing fat and albumin at the same time, and using malt-soup, which contains but one-third milk. The soapy stool is the usual result of strongly alkaline reaction in the intestine. The alkaline reaction arises first from the reduction of the carbohydrates (milk sugar); second, from the reduction of the whey; third, from an enriching with freshly prepared casein which prevents a primary fermentation of the carbohydrates; fourth, by reduction of whey. Eiweissmilch fulfils all the requirements. The different forms of disturbance found in these children are merely steps in one and the same process, beginning with disturbances of metabolism and ending in decomposition and alimentary intoxication. We must get these cases in an early stage of the disturbances, when we can easily cure them. Eiweissmilch is the best means we have for treating these cases after human milk. By its use we may cure the child without a reduction of fats and carbohydrates which would be dangerous to life. The value of eiweissmilch is that it so soon and so surely establishes a tolerance for carbohydrates without reduction of fats. By the use of eiweissmilch we produce a change in metabolism, and by adding carbohydrates we cure it. To stop the decomposition as soon as possible is the central problem. We add sugar up to 5 or 6 per cent, and if necessary a cereal. This acts as a palliative only to assist the eiweissmilch in establishing a true balance. Indications for the use of eiweissmilch are dyspepsia, decomposition, alimentary intoxication, infections causing disturbances of nutrition, intolerance of carbohydrates, disturbances from constitutional conditions, exudative diathesis, neuropathic, psychopathic and spasmophilic cases. In all forms of fermentation diarrheas eiweissmilch is indicated. It should never form a permanent diet and should not be given to normal children. Individualization of cases and physiological knowledge are necessary to its successful use.

The Protection of Infancy during the First Five Months of the European War.—A. Pinard (Ann. de gyn. et d'obst., Nov.-Dec., 1915, Amer. Jl. Dis. Women and Children) says that the Central Office of Assistance for Mothers and Infants arose out of the necessity for protecting infant life in a time of war, when many women found themselves pregnant against their will, and were liable to attempt to sacrifice their infants. Its object is to give to every woman pregnant or having an infant under three months old social, medical and legal protection. Delegates were installed in eleven "mairies" of Paris where such mothers would be found. These delegates were furnished with lists of the places where relief could be given. The first obstacle that was encountered was the small number of milk cattle that were to be had in the neighborhood of Paris, from which milk for the artificially fed infants could be had. The result was a severe epidemic of diarrhea in August and September. Hence there arose the necessity of giving to every mother encouragement to nurse her child. To every wife of a soldier was given daily a sum sufficient to buy food for each child. During these five months of war 3876 illegitimate infants were registered at the "maires" in Paris. These women had no claim on military assistance because they were unmarried. Many of them found themselves in the street without means of livelihood. In 1914 a law was promulgated to assist such women. This took care of 5743 children during five months of war. Another assistance came by the "secours de chomage," which aided women whose husbands had been killed in the war, or lost in any way, giving to the head of a family 60 francs a year for each child over thirteen months of age. The medical protection consisted in all day clinics at all the maternity hospitals. In three of these establishments 20,000 consultations with pregnant mothers were given. 12,303 infants were cared for in public maternities. The total births during the same period were 16,579, therefore 74 per cent were under public care. All these mothers were able to nurse their infants. The author considers the mother who cannot nurse her infant as a monster. The "bon de nourrices" allowed the mother to place her child with a wet-nurse at the expense of the state. This is a vicious measure since it allows the mother to leave her child. It has worked untold harm to the infants. Under these measures of assistance the mortality of the mothers has decreased, the number of infants born dead has diminished, and the number of abandoned infants is less. Further assistance should be given to these illegitimate infants by legitimizing them all.

The Effect of Malformation and Infection of the Oral Cavity of the Child upon its Future Health.—Stephen Palmore, D.D.S., of Poughkeepsie, by invitation, in discussion before the meeting of the Medical Society of the State of New York (N. Y. Med. Jl.), said that the fact that a man belonging to the dental profession had been asked to address this society was significant of the change that had come to pass; he quoted from the writings of Dr. Victor C. Vaughan to show the relations between mouth infections and various constitutional conditions. These made it evident that nothing was more important than hygiene of the mouth of boys and girls, for upon it depended the health of the men and women of tomorrow. Evidence in support of this statement might be brought forward from many authorities. Medicine today recognized the importance of prophylaxis, and in dentistry it found the prophylaxis of many conditions that had been puzzling to the physician. Malformations were of the utmost importance and were so common that they rarely saw normal mouths and teeth. This he attributed to the mixing of the races and the fact that enough time had not elapsed to evolve a definite type. To the proper moulding of the human face a full complement of teeth was requisite. Where there was malformation there was malocclusion, and this was the rule rather than the exception. The anatomy of the mouth and teeth was such that the loss of one tooth ultimately disturbed the balance of the whole. Therefore, one cause of dental deformity was the loss of one tooth. Thumb, lip, and tongue sucking was another cause of deformity, causing malocclusion and a narrowing of the palatal arch and basal construction. It was, therefore important for the rhinologist to work with the dental surgeon when it came to the treatment of mouth deformities involving the palatal arch, for such deformities retarded the function of the tongue, lips, and nasal passages.

Mayo and Hunter had emphasized the importance of oral sepsis as a source of infection. In the demonstration of alveolar abscesses the x-ray had been a great help to the dentist as it had to the physician. The value of oral prophylaxis had been amply proved by the establishment of dental dispensaries; in every city and town there should be a dental clinic. Pyorrhoea alveolaris was not a disease of childhood, and with proper prophylaxis and the correction of malocclusions it could be prevented. They might put it down as an axiom that a clean tooth never decayed, that teeth in good occlusion were easy to keep clean, and therefore teeth in good occlusion never decayed. The value of oral prophylaxis had been amply demonstrated in the German army. Attention had been given to this matter among the school children of Germany and as a consequence few of the German soldiers required dental care, while, on the other hand, such prophylactic work had not been carried on to the same extent in England, and there was a great deal of dental work to be done among the soldiers of the English army.

Early Diagnosis of Intussusception in Children under Three Years of Age.—Dr. A. W. Abbott, of Minneapolis, at a recent meeting of the Western Medical Association, said as children under three years had too little intelligence to describe their symptoms, a knowledge of their clinical behaviour was most important. Twelve children three years of age or under were observed, and the following conclusions reached: 1. A sudden violent abdominal pain, accompanied by a regurgitation of its stomach contents, in a child otherwise well, initiated the attack in 100 per cent of the cases. 2. Recurring pains, varying in intensity, but regular in periodicity, accompanied by the assumption of peculiar positions, generally the prone, in those strong enough to move about, occurred in 100 per cent of those noted. In cases beginning in collapse, twenty-five per cent, these periodical pains were often indicated only by regularly repeated moans and drawing up of the limbs. 3. An abdominal tumor could be made out somewhere in the course of the colon in ninety-two per cent. 4. The stools did not contain feces in ninety-one per cent. 5. Mucous stools are recorded in eighty-three per cent. 6. The foregoing indications should strongly suggest intussusception within forty-eight hours of the attack. 7. Blood in the stools added to this certainty of diagnosis, but it might be absent in seventy-seven per cent until after the second day. 8. Instead of distention, they might expect a flaccid, scaphoid abdomen. 9. Recurring vomiting was not usually one of the earliest symptoms, being absent in eighty-one per cent until the second day, or later in their cases, and in exceptional cases there was no vomiting. 10. Positive identification of the intussusception by the finger in the rectum was pathognomonic, but might be demonstrable in only fifty-five per cent. 11. The virulence of the disease and its mortality depended not so much upon the time elapsed before operation as upon the intensity of the strangulation of the mesenteric circulation. These observations were supported by the following mortality account: Of the twelve cases, eight ended in recovery, four being fatal. Of the non-collapsing cases, eight ended well, and one was fatal. Of those beginning in collapse, one terminated in recovery, and three were fatal. To protect all cases, the earliest possible diagnosis and operation were imperative.—New York Medical Journal.

Scarlet Fever, by Louis I. Dublin (Jl. of the Amer. Med. Assn., N. Y. Med. Jl.)—A total of 1,153 cases were studied with special reference to the sequelae of the disease and its influence upon the subsequent death rate of insured patients. Nearly eighty-two per cent of the cases occurred between the ages of two and ten years, but the greatest disposition to the disease was found to be between the ages of three and seven years. The total death rate in this series amounted to 7.8 per cent of the cases, but between the ages of two to ten years the death rate was nearly nine per cent. After the latter age this fell rapidly. Over ninety per cent of all deaths from scarlet fever were found to occur in children under ten years of age. In sixty-two of the ninety deaths recorded there were complications—eleven of kidney involvement, seven of the heart, thirteen pneumonias and four of meningitis. Among the 1,063 survivors, thirty-one had nephritis, the same number had otitis media, there were twenty-two cases of adenitis and eleven of pneumonia. Quite contrary to expectation, the occurrence of scarlet fever had no influence upon the subsequent mortality among its victims. The calculated average death rate was 18.6 and actually was eighteen for the number and age average under consideration. Among those dying none succumbed to kidney disease, which would seem to indicate that if the renal complications of scarlet fever are survived during the active stage of the disease they do not lead to permanent damage of such an extent as to result fatally in five years.

Duration of the Nursing Period in Women of the United States, by. A. Graeme Mitchell (Jl. of the Amer. Med. Assn., May 27, 1916, N. Y. Med. Jl.) The literature of European studies relating to this subject is reviewed, and although the evidence is somewhat conflicting, it indicates that there is little or no decline in the duration of the lacteting period. The conclusion regarding the nursing period in this country, so far as women of the poorer class are concerned are, that here also there has been no decline in breast feeding during the past fifteen years; that the women of this class compare favorably with those of the more prosperous classes; that the average duration of nursing is about six months; that twenty per cent of women do not nurse at all, forty-two per cent nurse for six months or over and thirty-four per cent nurse for nine months or longer.

Intestinal Obstruction in Children.—T. Jason Wood (British Journal of Children's Diseases, June, 1916, N. Y. Med. Jour.) remarks that apart from intussusception these cases are rare. Two cases are recorded, in one of which the first symptoms were associated with the respiratory organs, cough, etc., but there had been no bowel movement for two days. The temperature was 103 degrees F., the abdomen was considerably distended and slightly tender all over with no local swelling. The rectal examination was negative. The following morning it was possible to make out a tumor in the region of the umbilicus, cylindrical in shape, resembling intussusception, and operation was advised. The following day the operation was performed. There was a mass, apparently tuberculous in nature, infiltrating three or four inches of the small intestine and its mesentery. It was fixed and could not be delivered through the wound . A lateral anastomosis was done and the child made a rapid recovery. The second case presented a cyst of the mesentery about the size of a duck's egg in the lower part of the ileum. In this case there had been no bowel mevement for five days and she had vomited every day, the vomitus being fecal in character. At operation a gangrenous bowel was found and was resected.

Congenital Atresia of the Duodenum Successfully Treated, by N. P. Ernst (British Medical Journal, May 6, 1916, N. Y. Med. Jl.). Operation was performed eleven days after birth on a normal, healthy infant who showed signs of congenital intestinal obstruction. The duodenum from a short way below the ampulla of Vater to its junction with the jejunum was found to be completely obliterated. Enteroenterostomy was performed, uniting the duodenum, at about the junction of the superior and descending portions, with the upper end of the jejunum. After several days the symptoms of the previous obstruction had completely subsided, food was well taken, and the infant began to gain. Recovery was complete and the child soon resumed its normal weight and development. This is probably the only case in which successful operation has been performed for the relief of congenital intestinal atresia occurring at so high a point in the alimentary canal.

BOOK REVIEWS

Foods and Their Adulteration, by Harvey W. Wiley, M.D., Ph.D. Second edition, revised and enlarged, 629 pages, cloth binding, price $4.00 net. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, Publishers.

The author in the production of this volume has attempted to collect into one systematic whole a large mass of literature scattered throughout many books, journals, magazines, bulletins and government reports. It may be said at the outset that the author has succeeded admirably in producing a readable and useful work of reference on the subject, which while not quite exhaustive, will supply all the valuable information that the ordinary medical man may desire. The work treats systematically and quite exhaustively of all the principal food products, dealing in turn with their manufacture, properties and composition, forms of adulteration and dietetic value, and including much information of a general nature concerning them. Beginning with the animal foods, it thus covers meats and the various meat preparations, fish, milk and its products and oleomargarine. Then follow the vegetable foods, cereals, vegetables proper, condiments, fruits, sugar, syrup, confectionery, honey, and finally infants' and invalids' foods.

This work is intended for a wide variety of readers, though apparently designed first of all for the benefit of the public in order that they may more fully appreciate the origin, composition and manufacture of foods and be able from directions given, to detect adulteration in foodstuffs. The author devotes a section to infants' and invalids' foods in which will be found valuable information concerning this class of foodstuffs. He writes with an impartial pen and hews to the line but with no spirit of antagonism towards the prepared foods for infants; his aim being to bring out as pointedly as possible before the lay reader the supreme importance of feeding babies at Nature's fount.

Dr. Wiley not only covers the ground suggested by the title, but in a general way gives much useful information about foods and food values for bodily nourishment. In the section devoted to Animal Foods, Dr. Wiley inserts six plates showing the precise appearance of fresh cuts of healthy beef. On a whole, it is a valuable contribution to the subject of foods and we heartily commend the volume.

New Concepts in Diagnosis and Treatment, by Albert Abrams, A.M., LL.D., M.D., F.R.M.S. Formerly Professor of Pathology and Director of the Medical Clinic, Cooper Medical College (Department of Medicine, LeLand Stanford Junior University) San Francisco, Cal. 325 pages, cloth binding, eighty illustrations, $5.00 net. Philopolis Press, 711 St. Paul Building, San Francisco, Cal.

The author endeavors to bring forth the practical application of the electronic theory in the interpretation and treatment of disease. His physico-diagnostic and therapeutic methods are not exploited as theories; on the contrary, according to his claim, they are physico-clinical facts. Diagnosis and treatment are exploited to conform with the progress made in physics and the author attempts to show why the electrical nature of matter must supersede archaic cell-doctrine. He holds that vital phenomena are dynamic and the actions of organisms should be regarded not as structures but as processes. The author claims that all knowledge unless capable of numerical expression can never advance to the stage of science. He regards the cell as a problem of physical chemistry and invokes the data of ionization in studying the therapeutic action of medicaments. He regards the protoplasmic action of the drug as the algebraic sum of the effects of the individual ions. The author's method of telediagnosis—where he claims it possible to make a diagnosis over a distance of many miles and many other new observations incorporated in the appendix are beyond our ken. That which the author approves is correct, and all else must therefore be incorrect. We are not, at the present time en rapport with many of the views and teachings of the author, which does not mean that we are right or that he is wrong. He undoubtedly is a versatile genius. The book is well written, is interesting and instructive. If his means and methods of diagnosis come into general use they will revolutionize diagnosis and the profession will keep an anxious eye on his laboratories.

Eat and Grow Thin, by Vance Thompson. Cloth, $1.00 net. E. P. Dutton & Company, New York.

This little book is very cleverly written; it is entertaining and amusing. The claims for this special method of dieting are not new. All physicians know that a free allowance of hydrocarbons and carbohydrates tend to put on flesh and when these foods are restricted from the dietary all superfluous flesh disappears. This book exploits the Mahdah Dietaries. The greatest difficulty is met by those who fear that their lines are not such as dame fasion decrees and they are exerting themselves to know what to eat to be thin. The menus printed in this volume appear to be fairly well balanced and include certain combinations, almost every kind of meat except swine flesh, and all kinds of game and fresh and salt water foods; a long list of green vegetables, etc., which one may eat and eat well. The book can be read in an hour and according to the author, there is no guess work about results.

The Mortality from Cancer Throughout the World, by Frederick L. Hoffman, L.L.D., F.S.S., F.A.S.A.; Statistician the Prudential Insurance Company of America; Chairman Committee on Statistics, American Society for the Control of Cancer; Member American Association for Cancer Research; Associate Fellow American Medical Association; Associate Member American Academy of Medicine, etc., etc. The Prudential Press, Newark, New Jersey, 1915.

This volume of statistics from the Prudential Insurance Company compiled by Dr. Frederick L. Hoffman is the most extensive and comprehensive compilation of statistics on cancer we have seen. The Prudential and Dr. Hoffman are to be commended for placing this vast amount of data before the profession. The volume contains 826 pages and gives cancer statistics from all the large insurance companies, and from all parts of the world, with observations from competent observers. Every physician or surgeon who is treating cancers should look over these statistics.

Pellagra. Part I. A New Contribution to the Etiology and Pathogenesis of Pellagra. By Professors Giulio Alessandrini and Alberto Scala, of the Institute of Experimental Hygiene of the University of Rome. Illustrated with the original plates, and drawings made by the translator. Translated from the Italian by E. M. Perdue, A.M., M.D., D.P.H. Part II. Pellagra in the United States. By E. M. Perdue, A.M., M.D., D.P.H., Professor of Preventive and Tropical Medicine, Eclectic Medical University, Director Johnson's Pathological Laboratory for Cancer Research, Kansas City, Mo.; President American Association of Progressive Medicine. Kansas City, Mo.; Burton Publishing Co., 1916. Pp. 362. Price $3.00.

The opening remarks in the preface are sufficient proof of the antagonistic attitude of the mind of the translator to proved facts and methods of investigation. That which he approves of is correct, all else is incorrect. Scientific experiment has proven Pellagra to be a definite disease. The research of Funk and his co-workers, the work of Voegtlin of the Public Health Service, and other investigators, according to this author, are not of sufficient moment to even be mentioned.

Interesting as are the contributions of Alessandrini and Scala concerning the cause of pellagra, their contentions are not supported by clinical results. According to them, "pellagra is the effect of a chronic intoxication which is caused by silica in collodial solution in water of determinate composition, and therefore may be defined as a disease caused by colloidal minerals."

The recent report by Jobling and Petersen of the epidemiology of pellagra in Nashville, Tennessee, is a much more rational presentation and explanation than the foregoing.

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PEDIATRICS

Vol. XXVIII AUGUST, 1916 No. 8

EDITORIAL

THE NOURISHMENT OF CHILDREN

An obvious physiological consideration underlies the pathology of childhood. In the period of growth the process of nutrition is necessarily more active than when the fabric is stationary; the demand is greater and returns at shorter intervals, and any failure in supply is more immediately and more severely felt.

Hippocrates expressed this fact in a well-known aphorism, to the effect that old people endure fasting most easily, next adults, young persons not so well, and infants worst of all. Young animals have been shown by experiment to bear starvation worse than older ones; and we are told that at the seige of Paris those who suffered most from want of food were the very young, nursing mothers, the sick and the wounded. At the Seige of Lucknow, also, where the privations were great, disproportionately great was the mortality among the children. Dr. Johnson said that he had "fasted from the Sunday's dinner to the Tuesday's dinner without any inconvenience." As a child he certainly could not have done this "without any inconvenience." Young children and boys and girls are often insufficiently fed; they want more than their elders, and generally get less. "Send the children to bed and lay the goose to the fire," is a somewhat selfish proverb which indicates the practice of our early English ancestors.

The substantial late meal, formerly called supper, now dinner, is perhaps not exactly suited to childhood; but there should be some substitute for it. The fast from, perhaps, a five o'clock tea to the next morning's breakfast is too long. A growing and hungry child may get meat only once a day, while the gouty parent partakes of it three times, the esurient flunkey sometimes has meat five times a day, with accompanying and intermediate beer; how much both would be benefitted if each overfed menial were made to relinquish a portion of his meat in favor of some pale-faced child, perhaps an out-patient at the hospital for sick children in this city. The arrangement would be twice blessed, blessing him that gives and him that takes. I have often thought that school-boys are not fed well enough, and that not from want of means, but want of knowledge. Warren Hastings attributed his diminutive stature to this cause; but it is not necessary to go back to the last century for examples of the fault to which I refer. Children in the nursery, beyond the age of infancy, should have a little light food, such as milk, malted milk, or milk in combination with some of the artificial foods, or beef-tea with toast, bread or biscuit just before going to bed. School-boys or the like, who dine in the middle of the day, ought to have a little meat by way of supper.

ACUTE ANTERIOR POLIOMYELITIS

Once again a severe and somewhat prevalent epidemic of that alarming and distressing disease known among the laity as infantile paralysis is in our midst. The present epidemic is even more widespread and more virulent than the one which occurred in New York and environs in 1907 when America first became acquainted with the disease in epidemic form. At that time there was published in Pediatrics a full symposium of the views of authorities, of all that was then known of the malady. But before discussing the origin of the affection, its modes of transmission and so on, it will not be out of place to make a few remarks as to the name by which it is popularly known. The appellation infantile paralysis is obviously a misnomer. From the technical point of view, it has been discovered that paralysis albeit its most serious symptom is not the most frequent. Very many cases of the disease occur which exhibit no signs of paralysis, in fact, it is likely that in the majority of cases paralysis is absent. There are indeed several forms of the malady. Thus, from this standpoint the term infantile paralysis is incorrect. Moreover, the infection is not confined to infants and can be contracted by adults. It might be well to alter the name or rather to teach the general public that it is not appropriate. The term infantile paralysis has come to mean with the man in the street, a term almost of horror. Its terrors have been exaggerated by the lay journals to such an extent that a condition approaching panic has been engendered in the minds of heads of families. Especially are false views abroad with regard to its infectious nature. Among those who from the very nature of things are ill acquainted with the true facts wrong ideas with regard to its virilency and manner of spread are rampant and the sooner the community at large is educated as to acute anterior poliomyelitis in all its bearings, the better will it be for all concerned. It is a germ disease, at least, the evidence in support of this belief is so strong that it may be stated that it has been practically proven to be so. The virus causing it is so minute that it can only be detected in culture form by the aid of the highest power microscope. Flexner, Lewis and others of the Rockefeller Institute have succeeded by means of inoculation experiments, in transmitting the disease to animals.

Furthermore, M. N. Neustaedter showed that dust is perhaps the most potent factor in the dissemination of the infection, as some years ago he produced the disease experimentally in monkeys from the dust of rooms in which patients infected were or had been recently. This finding was fully confirmed by Swedish investigators. So it is now a matter of common knowledge that poliomyelitis is an infectious disease, but how acutely infectious is still an obscure point. Dr. Wade H. Frost, Passed Assistant Surgeon U. S. Public Health Service, in a pamphlet dealing with the question issued a short time ago, expresses the opinion that though poliomyelitis seems to be infectious by personal contact, that statistics do not appear to bear out this view. That is to say figures fail to show that it is communicable in a high degree from a sick person to one who comes in contact with such a person. It seems but slightly transmissible in this manner. Flexner is of the opinion that infection is mainly spread by direct contact and many are in agreement with him. Neustaedter, writing in New York Medical Journal, July 22, 1916, thinks that it is conceivable that its mode of dissemination may be through direct contact or indirectly through persons, living animals, or dead objects. House pets may carry the virus from place to place; toys, linen and so forth, will also carry the infection and as mentioned before, dust is probably the greatest disseminator of the disease. Neustaedter showed that the nasopharynx was the point of entry, and it may be taken as proven that such is the case.

With regard to the role of insects in the spread of the disease opinions of authorities differ. It is probable, in fact, more or less certain, that insects do not act as hosts of the virus but, on the other hand, the domestic fly may convey the germs on their feet to food and thus may be responsible to a considerable extent for the dissemination of poliomyelitis. The virus may be carried in dust and infect food and especially milk and water There is no specific treatment for the disease. Preventive measures are the means of staying or stopping an epidemic upon which reliance must mainly be placed. Seeing that dust plays a great part in its spread, it stands to reason that scrupulous cleanliness should be the watchword of Boards of Health. If the disease is indeed chiefly spread by direct contact, isolation of those suffering from it must be put into force and carriers, in particular, must be rendered as far as is possible, incapable of disseminating infection. The whole matter, however, is hedged in and encompassed with so many difficulties, that until more is accurately known of the means by which infection is spread, there will be little chance of stamping out the disease.

PEDIATRICS

ORIGINAL ARTICLES

THE NATURE, MANNER OF CONVEYANCE AND MEANS OF PREVENTION OF INFANTILE PARALYSIS*

BY SIMON FLEXNER, M.D.

Director of Laboratories of The Rockefeller Institute for Medical Research

The Rockefeller Institute for Medical Research has been appealed to by so many physicians and laymen for information and advice on the subject of infantile paralysis, that it has seemed desirable to relate the facts of the present knowledge concerning certain highly pertinent aspects of the disease, together with deductions of practical importance derived from them.

Nature.—Infantile paralysis is an infectious and communicable disease which is caused by the invasion of the central nervous organs—the spinal cord and brain—of a minute, filterable microorganism which has now been secured in artificial culture and as such is distinctly visible under the higher powers of the microscope.

Location of the Microorganism or Virus in the Sick.—The virus of infantile paralysis, as the microorganism causing it is termed, exists constantly in the central nervous organs and upon the mucous membrane of the nose and throat and of the intestines in persons suffering from the disease; it occurs less frequently in the other internal organs, and it has not been detected in the general circulating blood of patients.

Location of the Virus in Healthy Persons.—Although the microorganisms of infantile paralysis is now known, the difficulties attending its artificial cultivation and identification under the microscope are such as to make futile the employment of ordinary bacteriological tests for its detection. Nevertheless, the virus can be detected by inoculation tests upon monkeys, which animals develop a disease corresponding to infantile paralyis in human beings. In this manner the fact has been determined that the mucous membrane of the nose and throat of healthy persons who have been in intimate contact with acute cases of infantile paralysis may become contaminated with the virus, and that such contaminated persons, without falling ill themselves, may convey the infection to other persons, chiefly children, who develop the disease.

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*From Publication of the Rockefeller Institute Med. Res.

Relation of Virus to Types of the Disease.—The virus has, apparently, an identical distribution irrespective of the types or severity of cases of infantile paralysis. Whether the cases correspond with the so-called abortive forms of the disease in which definite paralysis of the muscles does not occur at all, or is so slight and fleeting as often to escape detection; whether they correspond with the meningeal forms in which the symptoms resemble those of acute meningitis with which muscular paralysis may or may not be associated; or whether they consist of the familiar paralytic condition, the virus is present not only within the nervous organs, but also upon the mucous membranes of the nose, throat and intestines.

Escape of Virus from the Body.—Microorganisms which convey disease escape from the body of an infected individual in a manner enabling them to enter and multiply within fresh or uninfected individuals in such a manner as to cause further disease. The virus of infantile paralysis is known to leave the infected human body in the secretions of the nose, throat, and intestines. It also escapes from contaminated healthy persons in the secretions of the nose and throat. Whether it ever leaves the infected body in other ways is unknown. At one time certain experiments seemed to show that biting insects and particularly the stable fly might withdraw the virus from the blood of infected persons and inoculate it into the blood of healthy persons. But as the virus has never been detected in the blood of human beings and later experiments with the stable fly have not confirmed the earlier ones, this means of escape of the virus must be considered doubtful. On the other hand, it has been shown by experiments on animals so that the same facts should be regarded as applicable to human beings, that the virus seeks to escape from the body by way of the nose and throat, not only when inoculation takes plane through these membranes, but also when the inoculation is experimentally made into the abdominal cavity, the blood, or the brain itself. From this it is concluded that the usual means of escape of the virus is by way of the ordinary secretions of the nose and throat, and, after swallowing these, with the discharges of the intestines.

Entrance of the Virus into the Body.—The virus enters the body, as a rule if not exclusively, by way of the mucous membrane of the nose and throat. Having gained entrance to those easily accessible parts of the body, multiplication of the virus occurs there, after which it penetrates to the brain and spinal cord by way of the lymphatic channels which connect the upper nasal membrane with the interior of the skull. Whether the virus ever enters the body in any other way is unknown Certain experiments already alluded to make it possible that it may be inoculated into the blood by insects, and other experiments have shown that under peculiar and extraordinary conditions, it may in monkeys enter through the intestines. But while the latter two modes of infection may operate sometimes, observations upon human cases of infantile paralysis and upon animals all indicate that the main avenue of entrance of the virus into the body is by way of the upper respiratory mucous membrane—that is, the membrane of the nose and throat.

Resistance of the Virus.—The physical properties of the virus of infantile paralysis adapt it well for conveyance to the nose and throat. Being contained in their secretions, it is readily distributed by coughing, sneezing, kissing, and by means of fingers and articles contaminated with these secretions, as well as with the intestinal discharges. Moreover, as the virus is thrown off from the body mingled with the secretions, it withstands for a long time even the highest summer temperatures, complete drying, and even the action of weak chemicals, such as glycerine and carbolic acid, which destroy ordinary bacteria. Hence mere drying of the secretions is no protection; on the contrary as the dried secretions may be converted into dust which is breathed into the nose and throat, they become a potential sauree of infection. The survival of the virus in the secretions is favored by weak daylight and darkness, and hindered by bright daylight and sunshine. It is readily destroyed by exposure to sunlight.

Conveyance by Insects.—Since epidemics of infantile paralysis always arise during the period of warm or summer weather, they have been thought of as possibly being connected with or dependent on insect life. The blood-sucking insects have especially come under suspicion. Experiments have been made with biting flies, bed-bugs, mosquitoes, and with lice. Neither mosquitoes nor lice seem able to take the virus from the blood of infected monkeys or to retain it for a time in a living state. In one instance, bed-bugs have been made to take up the virus from the blood of monkeys, but they did not convey it by biting to healthy monkeys. Certain experiments did indicate that the biting stable fly could both withdraw the virus from the blood of infected and reconvey it to the blood of healthy monkeys, which became paralyzed. But more recent studies have failed to confirm the earlier ones. Moreover, experimentally inoculated monkeys differ in one way from human beings suffering from infantile paralysis, for while the virus may appear in the blood of the former, it has never been detected in the blood of the latter. The ordinary or domestic fly may become contaminated with the virus contained in the secretions of the body and serve as the agent of its transportation to persons and to food with which they come into contact. Domestic flies experimentally contaminated with the virus remain infective for 48 hours or longer. While our present knowledge excludes insects from being active agents in the dissemination of infantile paralysis, they nevertheless fall under suspicion as being potential mechanical carriers of the virus of that disease.

Conveyance by Domestic Animals.—The attention which the recent epidemic of infantile paralysis has drawn to the diseases attended by paralysis has led to the discovery that domestic animals and pets are subject to paralytic diseases. The animals which have especially come under suspicion as possibly distributing the germ of infantile paralysis are poultry, pigs, and dogs and cats. But in isolated instances, sheep, cattle, and even horses have been suspected. All these kinds of animals are subject to diseases in which paralysis of the legs and other parts of the body sometimes appears. In not a few instances, paralytic diseases among poultry or pigs have been noted to coincide with the appearance of cases of infantile paralysis on a farm or in a community. Experimental studies have, however, excluded the above-mentioned animals from being carriers of the virus of infantile paralysis. The paralytic diseases from which they suffer have long been known and are quite different from infantile paralysis. Their occurrence may be coincidental; in no instance investigated has one been found to be responsible for the other.

Routes of Travel.—Studies carried out in various countries in which infantile paralysis has been epidemic all indicate that, in extending from place to place or point to point, the route taken is that of ordinary travel. This is equally true whether the route is by water or land, along a simple highway or the line of a railroad. In other words, the evidence derived from this class of studies confirms the evidence obtained from other sources in connecting the distributing agency intimately with human beings and their activities.

Survival of the Virus in the Infected Body.—The virus of infantile paralysis is destroyed in the interior of the body more quickly and completely than, in some instances, in the mucous membrane of the nose throat. It has been found in monkeys, in which accurate experiments can be carried out, that the virus may disappear from the brain and spinal cord within a few days to three weeks after the appearance of the paralysis. while at the same time it is still present upon the mucous membranes mentioned. The longest period after inoculation in which the virus has been detected in the mucous membrane of the nose and throat of monkeys is six months. It is far more difficult to detect the human than the monkey carriers of the virus since, as directly obtained from human beings, the virus displays a low degree of inactivity for monkeys; while once adapted to monkeys, the virus becomes incredibly active, so that minute quantities are capable of ready detection by inoculation tests. Yet in an undoubted instance of the human disease, the virus was detected in the mucous membrane of the throat five months after its acute onset. Hence we possess conclusive evidence of the occurrence of occasional chronic human carriers of the virus of infantile paralysis.

Fluctuation in Epidemics.—Not all epidemics of infantile paralysis are equally severe. Indeed great variations or fluctuations are known to occur not only in the number of cases, but also in the death rate. The extremes are represented by the occasional instances of infantile paralysis known in every considerable community and from which no extension takes place, and in the instances in which in a few days or weeks the number of cases rises by leaps and bounds into the hundreds, and the death rate reaches 20 per cent or more of those attacked. While all the factors which determine this discrepancy are not known, certain of them have become apparent. A factor of high importance is the infective power or potency, or technically stated the virulence, of the microorganism or virus causing the disease. This virus is subject to fluctuations of intensity which can best be illustrated by an example. The virus as ordinarily present in human beings even during severe epidemics has low infective power for monkeys. But by passing it from monkey to monkey, it tends to acquire after a variable number of such passages an incredible activity. However, occasional samples of the human virus refuse to be thus intensified. But once rendered highly potent, the virus may be passed along from monkey to monkey through a long but not indefinite series. Finally, in some samples of the virus, at least, a reverse change takes place—the virus begins to lose its virulence until it returns to the original or even to a diminished degree of infective power. In this respect the behaviour of the virus corresponds to the onset, rise and then the fall in number and severity of cases as observed in the course of epidemics of infantile paralysis and other epidemic diseases. Hence either a new active specimen of the virus may be introduced from without which, after a certain number of passages from person to person, acquires a high potency; or a specimen of virus already present and left over from a previous epidemic after a resting period and similar passages, again becomes active and reaches an infective power which equals or even exceeds that originally possessed. Another but more indefinite factor relates to the degree of susceptibility among children and others affected which at one period may be greater or less than at another.

Varying Individual Susceptibilities.—Not all children and relatively few adults are susceptible to infantile paralysis. Young children are more susceptible generally speaking, than older ones; but no age can be said to be absolutely insusceptible. When several children exist in a family or in a group, one or more may be affected, while the others escape or seem to escape The closer the family or other groups are studied by physicians, the more numerous it now appears are the number of cases among them. This means that the term infantile paralysis is a misnomer, since the disease arises without causing any paralysis whatever, or such slight and fleeting paralysis as to be difficult of detection. The light or abortive cases, as they are called, indicate a greater general susceptibility than has always been recognized; and their discovery promises to have far-reaching consequences in respect to the means employed to limit the spread or eradicate foci of the disease.

Period of Incubation.—Like all other infectious diseases, infantile paralysis does not arise at once after exposure, but only after an intervening lapse of time called the period of incubation. This period is subject to wide limits of fluctuation: in certain instances it has been as short as two days, in others it has been two weeks or possibly even longer. But the usual period does not exceed about eight days.

Period of Infectivity.—Probably the period at which the danger of communication is greatest is during the very early and acute stage of the disease. This statement must be made tentatively since it depends on inference, based on general knowledge of infection, rather than on demonstration. Judging from experiments on animals, the virus tends not to persist in the body longer than four or five weeks except in those exceptional instances in which chronic carriage is developed. Hence cases of infantile paralysis which have been kept under supervision for a period of six weeks from the onset of the symptoms may be regarded as practically free of danger.

Protection by Previous Attack.—Infantile paralysis is one of the infectious diseases in which insusceptibility is conferred by one attack. The evidence derived from experiments on monkeys is conclusive in showing that an infection which ends in recovery gives protection from a subsequent inoculation. Observations upon human beings have brought out the same fact, which appears to be generally true, and to include all the forms of infantile paralysis, namely the paralytic, meningeal, or abortive, which all confer immunity.

Basis of the Immunity.—The blood of normal persons and monkeys is not capable of destroying or neutralizing the effect of the virus of infantile paralysis. The blood of persons or monkeys who have recovered from the disease is capable of destroying or neutralizing the effect of the virus. The insusceptibility or immunity to subsequent infection, whether occurring in human beings after exposure or monkeys after inoculation, rests on the presence of the destroying substances, the so-called immunity bodies, which arise in the internal organs and are yielded to the blood. So long as these immunity bodies persist in the body, protection is afforded; and their presence has been detected twenty years or even longer after recovery from infantile paralysis. Experiments have shown that the immunity bodies appear in the blood in the course of even the mildest attack of the disease, which fact explains why protection is afforded irrespective of the severity of the case.

Active Immunization.—Protection has been afforded monkeys against inoculation with effective quantities of the virus of infantile paralysis by previously subjecting them to inoculation with sub-effective quantities or doses of the virus. By this means and without any evident illness or effect of the protective inoculation, complete immunity has been achieved. But the method is not perfect since in certain instances not only was immunity not obtained, but unexpected paralysis intervened. In the instances in which protection was accomplished. the immunity bodies appeared in the blood.

Passive Protection.—By transferring the blood of immune monkeys to normal or untreated ones, they can be rendered insusceptible or immune, and the immunity will endure for a relatively short period during which the passively transferred immunity bodies persist. The accomplishment of passive immunization is somewhat uncertain. and its brief duration renders it useless for purposes of protective immunization.

Serum Treatment.—On the other hand, a measure of success has been achieved in the experimental serum treatment of inoculated monkeys. For this purpose blood serum derived either from recovered and protected monkeys or human beings has been employed. The serum is injected into the membranes about the spinal cord, and the virus is inoculated into the brain. The injection of serum must be repeated several times in order to be effective. Use of this method has been made in a few instances in France where the blood serum derived from persons who had recovered from infantile paralysis has been injected into the spinal membranes of persons who have just become paralyzed. The results are said to be promising. Unfortunately, the quantity of the human immune serum is very limited, and no other animals than monkeys seem capable of yielding an immune serum and the monkey is not a practicable animal from which to obtain supplies.

Drug Treatment.—The virus of infantile paralysis attacks and attaches itself to the central nervous organs. Hence it is reached not only with difficulty because nature has carefully protected those sensitive organs from injurious materials which may gain access to the blood. but it must be counteracted by substances and in a manner that will not themselves injure those sensitive parts. The ideal means to accomplish this purpose is through the employment of an immune serum. since serums are among the least injurious therapeutic agents. The only drug which has shown any useful degree of activity is hexamethylenamin which is itself germicidal, and has the merit of entering the membranes, as well as the substance of the spinal cord and brain in which the virus is deposited. But experiments on monkeys have shown this chemical to be effective only very early in the course of the inoculation and only in a part of the animals treated. Efforts to modify and improve this drug by chemical means have up to the present been only partially successful. The experiments have not yet reached the point where the new drugs are applicable to the treatment of human cases of infantile paralysis.

Practical Deductions and Applications.—1. The chief mode of demonstrated conveyance of the virus is through the agency of human beings. Whether still other modes of dissemination exist is unknown. According to our present knowledge, the virus leaves the body in the secretions of the nose and throat and in the discharges from the intestines. The conveyers of the virus include persons ill of infantile paralysis in any of its several forms and irrespective of whether they are paralyzed or not, and such healthy persons who may have become contaminated by attendance on or association with the ill. How numerous the latter class may be is unknown. But all attendants on or associates of the sick are suspect. These healthy carriers rarely themselves fall ill of the disease; they may, however, be the source of infection in others. On the other hand, the fact that infantile paralysis is very rarely communicated in general hospitals to other persons, whether doctors, nurses, or patients, indicates that its spread is subject to ready control under restricted and supervised sanitary conditions.

2. The chief means by which the secretions of the nose and throat are disseminated is through the act of kissing, coughing, or sneezing. Hence during the prevalence of an epidemic of infantile paralysis, care should be exercised to restrict the distribution as far as possible through these common means. Habits of self-denial, care, and cleanliness and consideration for the public welfare can be made to go very far in limiting the dangers from these sources.

Moreover, since the disease attacks by preference young children and infants, in whom the secretions from the nose and mouth are wiped away by mother or nurse, the fingers of these persons readily become contaminated. Through attentions on other children or the preparation of food which may be contaminated, the virus may thus be conveyed from the sick to the healthy. The conditions which obtain in a household in which a mother waits on the sick child and attends the other children are directly contrasted with those existing in a well-ordered hospital: the one is a menace, the other a protection to the community. Moreover, in homes the practice of carrying small children about and comforting them is the rule, through which not only the hands, but other parts of the body and the clothing of the parents may become contaminated.

3. Flies also often collect about the nose and mouth of patients ill of infantile paralysis and feed on the secretions, and they even gain access to the discharges from the intestines in homes unprotected by screens. This fact relates to the domestic fly, which becoming grossly contaminated with the virus, may deposit it on the nose and mouth of healthy persons, or upon food or eating utensils. To what extent the biting fly is to be incriminated as a carrier of infection is doubtful; but we already know enough to wish to exclude from the sick, and hence from menacing the well, all objectionable household insects.

Food exposed for sale may become contaminated by flies or from fingers which have been in contact with secretions containing the virus; hence food should not be exposed in shops and no person in attendance upon a case of infantile paralysis should be permitted to handle food for sale to the general public.

4. Protection to the public can best be secured through the discovery and isolation of those ill of the disease, and the sanitary control of those persons who have associated with the sick and whose business calls them away from home. Both these conditions can be secured without too great interference with the comforts and the rights of individuals.

In the first place where homes are not suited to the care of the ill so that other children in the same or adjacent families are exposed, the parent should consent to removal to hospital in the interest of the sick child itself, as well as in the interest of other children. But this removal or care must include not only the frankly paralyzed cases, but also the other forms of the disease. In the event of doubtful diagnosis, the aid of the laboratory is to be sought since even in the mildest cases changes will be detected in the cerebrospinal fluid removed by lumbar puncture. If the effort is to be made to control the disease by isolation and segregation of the ill, then these means must be made as inclusive as possible. It is obvious that in certain homes isolation can be carried out as effectively as in hospitals.

But what has been said of the small incidence of cases of the disease among the hospital personnel and those with whom they come into contact, indicates the extent to which personal care of the body by adults and responsible people can diminish the menace which those accidentally or unavoidably in contact with the ill are to the community. Care exercised not to scatter the secretions of the nose and mouth by spitting, coughing and sneezing, the free use of clean handkerchiefs, cleanliness in habits affecting especially the hands and face, changes of clothes, etc., should all serve to diminish this danger.

In the end, the early detection and isolation of the cases of infantile paralysis in all of its forms, with the attendant control of the households from which they come, will have to be relied upon as the chief measure of staying the progress of the epidemic.

5. The degree of susceptibility of children and other members of the community to infantile paralysis is relatively small and is definitely lower than to such communicable diseases as measles, scarlet fever, and diphtheria. This fact in itself constitutes a measure of control; and while it does not justify the abatement of any practicable means which may be employed to limit and suppress the epidemic, it should tend to prevent a state of over-anxiety and panic from taking hold of the community.

6. A percentage of persons, children particularly, die during the acute stage of the disease. This percentage varies from five in certain severe epidemics to twenty in others. The average death rate of many epidemics has been below 10 per cent. A reported high death rate may not be actual, but only apparent, since in every instance the death will be recorded, while many cases which recover may not be reported at all to the authorities. In the present instance it is too early in the course of the epidemic to calculate the death rate which may prove to be considerably lower than it now seems to be.

7. Of those who survive, a part make complete recoveries, in which no crippling whatever remains. This number is greater than is usually supposed, because it includes not only the relatively large number of slight or abortive cases, but also a considerable number of cases in which more or less of paralysis was present at one time. The disappearance of the paralysis may be rapid or gradual—may be complete in a few days or may require several weeks or months. .

The remainder, and unfortunately not a small number, suffer some degree of permanent crippling. But even in this class, the extent to which recovery from the paralysis may occur is very great. In many instances the residue of paralysis may be so small as not seriously to hamper the life activities of the individual; in others in whom it is greater it may be relieved or minimized by suitable orthopedic treatment. But what it is imperative to keep in mind is that the recovery of paralyzed parts and the restoration of lost muscular power and function is a process which extends over a long period of time—that is, over months and even years. So that even a severely paralyzed child who has made little recovery of function by the time the acute stage of the disease is over, may go on gaining for weeks, months, and even years until in the end he has regained a large part of his losses. Fortunately, only a very small number of the attacked are left severely and helplessly crippled. Lamentable as it is that even one should be so affected, it is nevertheless a reassurance to know that so many recover altogether and so much of what appears to be permanent paralysis, disappears in time.

There exists at present no safe method of preventive inoculation or vaccination, and no practicable method of specific treatment. The prevention of the disease must be accomplished through general sanitary means; recovery from the disease is a spontaneous process which can be greatly assisted by proper medical and surgical care. Infantile paralysis is an infectious disease, due to a definite and specific microorganism or virus; recovery is accomplished by a process of immunization which takes place during the acute period of the disease. The tendency of the disease is toward recovery and it is chiefly, or only because the paralysis in some instances involves those portions of the brain and spinal cord which control respiration or breathing and the heart's action, that death results.

Finally, it should be added that not since 1907, at which time the great epidemic of infantile paralysis, or poliomyelitis, appeared in this country, has the country or this State or city been free of the disease. Each summer since has seen some degree of accession in the number of the cases; the rapid rise in the number of cases this year probably exceeds that of any previous year. But it must be remembered that in 1908 several thousand cases occurred in the greater city—possibly, indeed, many cases of and deaths due to the disease were never reported as such. Hence the present experience, severe and serious as it is, is not something new; the disease has been severely epidemic before and was brought under control. The knowledge regarding it now is far greater than it was in 1908; and the forces of the city which are dealing with the epidemic are probably better organized and in more general cooperation than ever before. The outlook, therefore, should not be regarded as discouraging.

THE PHYSIOLOGY OF THE NEW BORN INFANT*

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No mammal mother is so completely incapacitated for carrying out the duties necessary to protect and nourish her young during the first few days after parturition as is civilized woman. On the first day after birth the mother is usually absolutely dependent on the ministrations of others. The infant shares this dependence. Even the natural food supply of the parturient mother is extraordinarily small, for the total fuel value of the colostrum is insufficient during the first few days, even under the most favorable circumstances. These statements by careful students of the physiology of the new-born infant, expressing facts long appreciated by pediatricians, serve to raise a number of questions of practical as well as of theoretical importance. There are many who will say, with the characteristic mental inertia established by long custom, that experience has given adequate indications for the management of the early days of infancy, and that attempts to "improve on Nature" are alike gratuitous and futile.

If the medical profession were to approve unhesitatingly this sort of laissez faire policy of viewing the experience of every day life, progress would indeed be slow. It must be remembered, furthermore, that in the case of the new-born infant, a large element of artificiality has entered into the conditions surrounding the early days of life. The accepted provision for the care and management of the infant are far from being dictated solely by "natural" provisions. It is entirely rational, therefore, to enquire as to the infant's peculiar needs during the first few days, and whether the new-born child becomes automatically adjusted to the conventional state of affairs to which it is introduced.

The practices which follow parturition are by no means universal The familiar loss of body weight shortly after birth has already been the subject of numerous experimental investigations with respect to the possibility or desirability of attempting to avert it. At the Boston Nutrition Laboratory of the Carnegie Institution of Washington, Benedict and Talbot have recently made an elaborate investigation of the character and amount of the metabolism of the new-born infant. In reviewing this subject they have noted that the loss in weight may not be taken as an index of its physiologic needs for nourishment, since an analysis of the character of this loss in weight shows us that there are two distinct causes: (1) mechanical and (2) physiologic. The loss of meconium, of allantoic fluid regurgitated from the stomach, or urine, and even of performed water is mechanical. The most important physiologic loss is that due to the actual oxidation of body substance as a result of metabolism. With the first moment after delivery and as soon as the lungs have become filled with air, the infant begins to oxidize body substance, this material being chiefly fat, with some protein and some carbohydrate. The loss of water as a factor in decline of body weight must not be overlooked.

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The statement is sometimes made that the metabolism of the infant is of a peculiar kind. Thus it is alleged that there is an excess of glycogen available in the body of the new-born infant. The study of the respiratory quotient of a large number with unusual care soon after birth has now shown the precise nature of the nutritional factors concerned. Benedict and Talbot state that the profound influence of the mother's milk on the character of the catabolism is shown by the fact that the time when the milk begins to appear in the mother's breasts almost invariably coincides with the increase in the respiratory quotient. On the first day of life the infant is subsisting on the moderate amount of glycogen in the body at birth. On the second, third and fourth days the colostrum is entirely insufficient to supply the needed energy; on the fifth day the milk flow is usually established, and subsequently the respiratory quotient is not far from 0.81, indicating a catabolism in which somewhat over one-third of the energy is derived from carbohydrate. This quotient is not far from that found with normal persons. There is no indication that the infant at birth has an excessive supply of glycogen in the tissues.

The observations made by these investigators indicate that there is a distinct correlation between the body temperature of the infant and the total metabolism, for on the days with low body temperature the total metabolism was likewise low. These low temperatures are seldom found other than on the first day after birth. They are regarded as due solely to the exposure incidental to the birth, the subsequent bath, and other special details of the care of a new-born infant. It is of peculiar significance, therefore, that on the first day, when the low temperatures predominate, Benedict and Talbot find likewise a somewhat lower metabolism per kilogram of body weight and per square metre of body surface than on the subsequent days, thus bearing out the contention that the metabolism is considerably affected by the temperature of the infant's body.

On the basis of these measurements, the daily energy requirment for infants from 1 1-2 to 6 days old is estimated at approximately 62 calories per kilogram of body weight. This includes the requirement for maintenance and a modicum of activity; it makes no special allowance for the needs of growth, which is usually in abeyance during the period noted. The energy loss can be reduced by intelligent nursing in the early days. Muscular activity as is represented by unnecessary crying, can be avoided. The infant can be made comfortable by attention to minor details so as to avoid the shock of cold and other provocatives to muscular response. The temperature can be conserved in the early days of defective regulation of heat loss.

It can scarcely be doubted that even under the most favorable conditions the total amount of available energy in the colostrum which the child receives from the mother's breast during the first few days is wholly insufficient to supply the energy needs. Why Nature does not provide more liberally during the first few days is a teleologic question. Benedict and Talbot comment on the striking fact that only human mothers and new-born infants are so entirely dependent on the care of others. The relationship between this fact and the development of civilization is most interesting and leads one to ask if this scant food supply is a natural consequence of civilization, and whether civilization is called on to remedy it.

Shall an attempt be made, as a rule, to supplement the contributions from the mother's breast? We tread here on the dangerous ground of uncertainty and controversy. If inanition actually ensues, the infant is obliged to subsist on its own body reserves, possibly to its detriment. It is argued that if acidosis resulting as a consequence is undesirable, the best method to combat it consists in feeding carbohydrate. Perhaps it is safe to abide by the advice of Benedict and Talbot. If supplemental feeding is necessary, they remark, it would seem on general principles that the food material most easily digested and most readily absorbed for oxidation would be a soluble carbohydrate. The carbohydrate possessing these qualities in the greatest degree is glucise, as it requires no hydrating ferment to convert it into blood sugar. If the infant is to be fed, we may again emphasize the fact that a knowledge of the energy requirement for the first week is most important. Those in charge of the child at this time should, therefore, have a practical experience in supplemental feeding, for a disturbance of the digestion in the first few days after birth is most harmful, and may even prove fatal.—J. A. M. A.

ACIDOSIS AND CYCLIC VOMITING IN CHILDHOOD*

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Acidosis is the same disease in children as it is in adults, but the consequences are more serious because undeveloped tissues are more vulnerable than mature ones, and the incidence of the acid intoxication falls especially heavy on the unstable nervous systems of youthful individuals. Although I have little doubt that the general pathology of the whole subject will be adequately dealt with by other contributors to this symposium, I venture to refer somewhat fully to this aspect of the question because my own views with respect to the causes of the condition are not altogether in harmony with those generally held.

It is perhaps unnecessary for me to point out that the term "acidosis" has now a much wider significance than it had formerly when first introduced by Naunyn to cover a condition in which certain acetone bodies were excreted in the urine of diabetic patients. At the present time the term is employed to explain a number of different conditions in which owing to metabolic disturbances a great variety of different acids, not only acetone bodies, are produced in excess in the body and in the process of neutralization deplete the system of "basic elements." Neither the production of these acids nor their presence in the urine necessarily appears to exercise any serious influence on health, the injuries inflicted depend rather on the removal of bases such as ammonia, calcium, potassium, sodium, magnesia, etc., from the blood and tissue cells. Acids are always produced by the normal processes of metabolism, and fixed bases are always removed from the body for their neutralization, but a condition of true acidosis is not produced, unless the amount of acids produced is great or the alkali depletion excessive. Without attempting to define the distinctions between normal and excessive production I will proceed at once to consider the reasons why an excessive production should, in certain cases, take place. If we could definitely answer this question, most of the difficulties of the problem would disappear. The solutions to the problem which I offer are only tentatively suggested and they have little beyond common sense to support them.

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Viewing the question in the very widest manner and remembering the conservative character of the processes of the animal body, it may be regarded as improbable that such loss of energy as is involved in the passage from the body of semi-oxidized products would be tolerated unless the supply of energy exceeded the physiological needs. I regard over-feeding, as the key not only to the problem of acidosis, but also of many of the common conditions of malnutrition which affects children.

If more food is consumed by the child than is required for the immediate purposes of heat production, the display of energy, and for the maintenance and growth of the tissues, the excess will be dealt with in a manner which will cause the least possible inconvenience to the body as a whole, and will be got rid of by calling into play one of the many protective mechanisms with which the animal system is provided; it is difficult to say which particular mechanism will be utilized, the choice is merely a question of physiological expediency. In a great majority of cases the most economical method, in a physiological sense, of disposing of excess of nutriment is by storage, in the form of reserves of glycogen or fat, but the limits of storage are at all times inconsiderable, and in many cases extremely small. There are several alternative methods. The excess of food may be burnt up to the normal end-products, carbonic acid, water and urea, without waste of potential energy, but such combustion entails the supply of much oxygen and the production of much heat, it may be physiologically expensive to supply the required amount of oxygen, and impossible to dispose of the resultant heat without great strain being thrown on the temperature regulating mechanism of the body. Under such conditions it may be a better alternative to short circuit the combustion and allow only a partial metabolism of the food products, the oxidation stopping short at such half-way stages as lactic acid, oxalic acid, uric acid, glycuronic acid, di-acetic acid, or beta-oxybutryic acid, rather than to allow complete oxidation to the usual end-products. Under such condition the excess will be disposed of in a manner which will economize in certain directions, i.e., in the use of oxygen, and in the work of dissipating heat, but a loss will be incurred in others, namely in the abstraction of the bases which are required for the neutralization of the large molecular acid radicles produced. In any particular case it will be for the administrative authorities in the central nervous system to estimate which is the most expedient method to adopt, and having made the selection to call the necessary mechanism into play. There can be little doubt that in the infinite wisdom of nature's operations the best and most economical course will in each case be adopted. The risks of excessive heat production are considerable in the case of infants who are kept warmly swaddled up in a superfluity of clothing. and who are deprived of many of the opportunities for dissipating heat which are open to older children. It is not therefore surprising that nature in the case of slum infants so often adopts, in preference to complete oxidation, an alternative method. The method of wasteful combustion is often selected in the case of such infants and hence a large quantity of acid bodies are produced, and the system is deprived of many basic elements which are employed to neutralize them. If there is an adequate supply of bases to compensate for this loss all is well, if not the tissues will suffer in proportion to the quantity excreted, the red blood corpuscles will suffer loss of potassium or sodium, the plasma will be depleted of carbonates, the hemoglobin of iron, the bone of calcium, the proteins of ammonia, and so on.

The injuries thus inflicted on the body will be varied and serious, and they will be observable to the experienced eye, even without employing the resources of the pathological laboratory by which exact estimations of the alkali depletion can now be made.

One of the most obvious and striking results of the carbonate depletion from the blood plasma is "acyanotic hyperpnea," in other words rapidity of breathing without blueing of the skin. The loss of carbonic acid carriers makes rapid breathing necessary to compensate for the small quantity of carbonic acid gas which can be got rid of at the lung's surface during a single respiratory act, and the same necessity explains the quick pulse and rapid heart's action.

The clinical picture of the infant suffering from carbonate depletion is like that of pneumonia, namely a flushed face, rapid breathing and a quick pulse. Within the last month I have seen three cases in which typical acidosis was mistaken for pneumonia in young infants.

The injuries inflicted on the red blood corpuscles by the mineral depletion, and it must be remembered that the blood is the first to feel the incidence of the injury, brings about a considerable hemolysis or destruction of red cells. This to some extent interferes with the oxygen supply, but its most striking influence is on the hemogenetic functions of the body; in acidosis very serious anemia would invariably result were it not for the compensatory activities of the blood forming centers in the red marrow of the long bones. This compensatory activity is, I firmly believe, the true explanation of the enlargement of the epiphysis in cases of rickets for which I have never heard any other reasonable explanation.

The depletion of calcium and other metallic bases naturally explains the incomplete mineralization of the bones and their softness.

The nervous symptoms are also due to the same causes depleting the nerve cells of their mineral elements. The typical symptoms of rickets can thus be explained on the grounds of an existing acidosis. The usually fat appearance of the subject of rickets is due to storage of excess and the calling into play of the most economical of the protective mechanisms, the sweating represents an attempt at dissipating heat by a method of surface evaporation. The enlarged epiphyses are consequent on the compensatory activity of the red marrow of the long bones. The softness of the bones is due to their demineralization for the supply of neutralizing bases. The deformity or rather want of form of the bones is due to failure of those muscular activities which bring about the normal post-natal changes in the osseous tissues. We may say, then, that in the infant the common clinical picture of an acidosis is that of rickets with occasional severe crises which take the form of convulsions or often severe nerve strains, such as attacks of cyanotic hyperpnea.

In older children we get the attacks taking the form of cyclic vomiting, recurrent bilious attacks, sick headaches, or migraine The attacks are recurrent and definitely periodic, usually because the habits of life and the degree of over-feeding remains uniform, and it requires about the same number of days to produce the necessary degree of acidosis as to produce the storm. A cure is naturally led to by the loss of appetite, the vomiting and perhaps the diarrhea which supervene in the course of the attack, and then the cycle commences over again.

A very common concomitant or complication of acidosis is a "coli" infection of the urinary system. The coli bacillus shows strong preference for an acid medium, and hence will not desert the congenial conditions of the large intestine, for the blood or the urinary tract, unless there is an existing or a potential acidosis.

It is one of the most striking features of coli infections of the bladder and kidneys that the degree of acidity of the urine is so high that enormous quantities of alkali must be administered to render it neutral or alkaline. In other words, the degree of alkali tolerance is greatly raised. The cure of a coli infection consists in rendering the urine alkaline. Coli infections can be prevented by the same means or by guarding against those causes, namely, those associated with overfeeding, which leads to a relatively acid condition of the blood. I do not like to pursue this argument too far, but I suspect that permanent conditions of alkali depletion of the blood may play a part in favoring other infections in childhood. For instance, it may be that the so-called rheumatic diathesis is nothing more than a condition of reduced carbonate content of the blood which invites invasion by certain specific organisms. I feel sure that among the troubles of teething in infants, both as cause and effect, acidosis plays an important part. Every old wife knows the ammoniacal character of the urine during teething, and the easily decomposable condition of its ammonia-containing contents which this condition of the urine represents, points to acidosis in two ways. It means a high ammonia output, and also a high hydrogen ion in concentration, both indices of a high degree of acidosis. The nerve storms so liable to occur during teething are partly due to the raised excitability of the whole nervous sphere brought about by the alkali extraction and partly by the direct reflex or irradiated transmission of impulses from the sore gums. I stated in an earlier part of this article that I regarded excess of food as the chief factor in acidosis production and this view is in no way disturbed by the well known fact that starvation invariably leads to the appearance of acetone bodies in the urine. But this statement requires qualification. By "excess" is meant relative excess, and not excess as measured by the usual standards. Since food is measured for the purpose of heat and energy production and for the repair and growth of tissue, the amount of food required to fulfill the physiological requirements will differ in each particular case; and consequently the conditions necessary for acidosis production will be most variable also. Each child creates a different physiological demand for food in accordance with his general habits of life; the amount of exercise he takes: the temperature conditions of his environment; his clothing; the climatic conditions and a thousand other varying factors in his surroundings. It follows that a diet which is perfectly physiological under certain conditions may become pathologically excessive under others, and vice versa. I would here state that however important temperature conditions may be in influencing food requirements they play a very insignificant part in comparison to the amount of exercise taken. An active energetic child creates a great demand for food; the sluggish apathetic child has but small requirements. What light this throws on the production of rickets and how well it explains the vicious circle set up! With an excessive dietary an acidosis is set up, the acidosis may cause paresis of all muscular activities, thus rendering the already excessive dietary a thousand times more excessive and thereby adding to the acidosis.

But even energy requirements do not exhaust the factors which determine what is and what is not a properly adjusted dietary or what will and what will not lead to acidosis production. There may indeed be great demands for sources of energy owing to the environmental conditions, and yet owing to internal disabilities of metabolism, of digestion, of assimilation, of circulation or what not, if the requirements of the external environment are satisfied by the appropriate quantities of food, an acidosis may easily supervene from incomplete oxidation or incomplete utilization of the sources of supply. To give two instances: A child with diabetes may display great energy, live in a cold climate, and fulfill all the other conditions which would entitle him to a large supply of food; but owing to the metabolic disabilities associated with his disease, his diet will consequently become "relatively excessive" and he will be unable to oxidize certain of the food elements, notably the fats, to their normal end-products and an intense acidosis may result. As a second illustration I may instance the case of a child with some disability of kidney function; under such conditions he may be deprived of the power of eliminating urine with a high hydrogen ion concentration and under such conditions acid bodies may tend to accumulate in the blood.

In conclusion I would refer to certain points in the treatment of acidosis, dealing both with the prophylactic and the remedial aspects. In the prevention of acidosis in children the treatment may be summed up in one word, namely "diet," and the essential factor is the avoidance of excess either in respect of the total amount or in respect of any of its component elements. The difficulty of controlling the amount is much more difficult after the bottle stage, when the quantity can be accurately measured. On the other hand after the first year of life the child acquires some power of independent locomotion, and hence creates physiological demands for food which mitigate the dangers of excessive feeding. Knowing how difficult, or impossible, it is for the physician to control the dietary of the pampered child and keep it within the bounds of physiological safety, I strongly advise all those whose duty it may be to regulate the dietary of such patients to concentrate their energies on two points: firstly in keeping the diet simple rather than appetizing; secondly in creating demands for food rather than in attempting to curtail the supply. A physiological demand is made by providing opportunities for exercise in the open air; by instituting breathing exercises; by enjoining the wearing of light clothes; by keeping the nursery cool; by insisting on the open window; and if necessary by ordering massage and Swedish exercises. A certain amount of good can be done by limiting the meals to three per day; by forbidding all extras between meals such as cod liver oil, or malt, so dearly beloved by anxious parents. The sort of diet I recommend for a child two years of age is:

for breakfast, eight ounces of milk, two thick pieces of toast or crusty bread with butter, jam (without seeds, pips or skins) or stewed fruit. For dinner, meat, fish, egg, fowl (in series), plenty of well boiled vegetables, small quantity of potato, and always a milk pudding and stewed fruit. For tea the same as breakfast. Children thus fed sit down hungry for their meals, but they do not over-eat and there is little temptation to do so, but they remain well and grow strong, which are the chief desiderata. Any child who does not sit down to meals hungry is potentially over-fed, badly managed and probably either in a condition of acidosis or of threatening acidosis.

I have said little throughout this paper of the importance of "balance" in the dietary, feeling convinced that many other contributors will point out how excess of one of the chief food elements will render another group, otherwise adequate in amount, relatively deficient. Or what is the same thing differently expressed. the deficiency of any one food element will render another food group relatively excessive though otherwise adjusted to the physiological requirements. The adequate balance between fats, carbohydrates and proteins constitutes one of the chief prophylactic resources at our command against the production of metabolic derangements.

The routine exhibition of alkalies to children properly fed is quite unnecessary, but the supply of plenty of water for drinking purposes is most essential.

The remedial treatment of an existing acidosis can also be summed up in one word, namely, "alkalies." These should be given first, last, and all the time; either intravenously, interstitially or orally according to the urgency of the symptoms. Some children show an enormous tolerance for alkalies. If the case is not a severe one I order mixed salts, i.e., bicarbonate of sodium, citrate of potassium and carbonate of magnesium in varying proportions, to be given to the extent of one level teaspoonful every morning first thing, in water with orange juice and a small quantity of sugar this makes quite a pleasant effervescing draught. In severe cases of cyclic vomiting the interstitial injection of a pint or more of two per cent sodium bicarbonate solution often works wonders, especially if combined with citrate of caffein and infusion of digitalis. By these means the elimination of the neutralized acidosic bodies is greatly expedited.

SOCIETY TRANSACTIONS

Transactions of the American Pediatric Society*

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The President, Rowland G. Freeman, M.D., of New York, in the Chair.

Presidential Address.—Dr. Rowland Godfrey Freeman, New York City.—There is an agent of wonderful power and value to the pediatrician, the use and action of which is little appreciated—fresh air. By fresh air as a therapeutic agent we mean moving and cool out-of-door air. The air of the still, hot, humid dog day of summer is little better than that of the crowded, hot room in winter. Fresh, moving, cool, out-of-door air stimulates the appetite, induces quiet sleep, brings color to the cheeks, and increases the resistance of the organism to infection. In seeking an explanation of the action of fresh air on the human body we find the claim that fresh, cold air raises materially the blood pressure. This claim, however, has not been confirmed by subsequent investigations, and we seem driven to the position that the favorable action of fresh air on the organism is due to the absence of the deteriorating effects of closed rooms. In the fresh air the body has the advantage of normal conditions, while any modification of this furnishes increasingly serious results from air stagnation. The idea that air which has been breathed by other people is unhealthy probably arises from the unpleasant odor of closed and crowded rooms, and from symptoms elicited by extremes of this sort. The symptoms produced by closed places are depression, headache, thirst and difficult breathing. The elements producing these results were supposed to be a diminution of the oxygen and an increase of the carbon dioxide, with the possible appearance in such an atmosphere of a really poisonous product from the expired air. Experiments, however, have for the most part discredited this theory. The amount of oxygen in crowded, closed rooms is not depleted to a danger point, nor is the amount of carbon dioxide increased to such a point. Efforts to find a poisonous element in such air have been made from time to time with negative results. In 1883, Hermans of the Hygienic Institute in Amsterdam, concluded that the discomfort of crowded places was due to inability of the body to cool itself in a hot, moist atmosphere. These symptoms then are due to stagnant, hot, moist air surrounding the body, and will be accentuated in people wearing heavy, impervious clothing that prevents access of moving air to the skin. It is evident then that we should wear as little clothing as is consistent with comfort. The result of these elaborate observations is, in brief, that fresh air is good, not because it supplies oxygen, not because it is not overloaded by carbon dioxide not because it contains no poisonous element, but because it allows the body to exist under such circumstances that it can control its moisture and temperature. In the application of these newly developed facts to our daily work in pediatrics we have to combat the traditional fear of drafts and the habit of many people of living in close, hot rooms. It is only by the brilliant results obtained in certain diseases, notably tuberculosis and pneumonia, by the use of fresh air that we are able oftentimes to obtain the fresh air for our children which they need for the preservation of health and their proper development. I believe that the cold air of winter is much more stimulating and produces better results in children than the mild air of spring and autumn. The best results from fresh air are obtained by keeping the children out of doors day and night. Many of our pediatricians have confused fresh air with cold air. Out-of-door sleeping porches enclosed on three sides and roofed, but open to the south, furnish the best fresh air at night, while in the daytime balconies and rooms without heat and windows wide open supply the air we need. It is evidently not enough, however, that we should have this fresh air, but we should also look to the clothing to see that our children are not sealed in heavy, impervious covering, so that the skin is unable to rid itself of the heat and moisture. Where it is impossible to obtain such complete out-of-door exposure, the best substitute in cold weather has seemed to me to be in rooms with cheesecloth screens in the windows. They allow a moderate access of air without the presence of drafts. Other methods of ventilation consist in patent ventilators put under the lower sash. It is only during the existence of marked changes of temperature between indoors and outdoors that epidemics of colds exist, for during the summer we have practically an immunity to colds and they only occur when our houses are closed. In New York our epidemics of colds usually begin in November and December.

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*Amer. Jl. Dis. Women and Children.

Premature infants who show a subnormal temperature in cool air should be kept in an air temperature that will preserve the normal body heat. This warm air must be a freely moving, warm air, rather than the dead air found at the bottom of a box. I am not sure whether such cold, fresh air treatment is applicable to cases with kidney lesions or with severe heart lesions. The most important application of this fresh air treatment is to build up the vitality and resistance to disease of frail children. I believe that rachitis is entirely a disease of housing. It exists, not in tropical countries where people live out-of-doors, but in colder climates where people house themselves in winter. The symptoms develop in winter only and the severe cases that we see are entirely confined to the children of races that have been accustomed to warm climates where the families do not house themselves in winter. Italians and colored people and other people accustomed to tropical climates should be warned that they must give their children fresh air in winter if they would have them survive and develop properly. In all the acute infectious diseases I think there is now a general acceptance of the advantage of fresh air, excepting perhaps in measles and scarlet fever. In tuberculosis and in pneumonia there is no question of its advantage.

It would seem that some explanation is due as to why, if all these statements are true, children are still housed and many adults have a panic if a breath of cold air strikes the back of their neck or bald heads, while children who are brought up without fear of cold enjoy it wherever it strikes. The supposed production of catarrhal inflammation in adults by exposure to cold air, if it really exists, exists only on account of suggestion. These people have been brought up to such a fear of fresh air that every infection of the upper air passages to which they succumb they attribute to this health-giving influence. It is sincerely to be hoped that many of the coming generation may be brought up under different ideas and may be less dependent on hot, offensive, stagnant air for the supposed comforts of life. There is evidence enough to show that many diseases are favorably influenced by this simple and safe measure. Why don't you use it? Some are afraid, some won't take the trouble. Many children are allowed to become sick from housing and children may be seen dying in closed wards of many of our best hospitals who might have been saved had they been put out-of-doors.

Recent Progress in Out-Knowledge of the Physiological Action of Atmospheric Conditions.—Dr. Frederick S. Lee, New York: Two weeks ago today, in the physiological laboratory of the Columbia School of Medicine, Dr. Eastman and I made experiments the results of which have changed our ideas concerning the physiological action of atmospheric conditions. It had long been the custom to ascribe to chemical components of the atmosphere the bad effects of living in air that had already been breathed by human beings. The discovery of oxygen and carbon early in the last century gave a great stimulus to this notion, and it became firmly fixed in the minds of chemists, physiologists and physicians, as well as the educated masses, that air that had once been breathed was chemically vitiated and rendered unfit for human use by the lack of oxygen, the accumulation of carbon dioxide, and the presence of an organic poison of unknown nature. No sooner had this notion become widely accepted than the laboratories began to demonstrate the inadequacy of the supposed proof of the notion. To cut a long story short, we now know that, except under very unusual circumstances, the harmfulness of respired air is not due to its chemical components. The harmfulness of living in confined air is found in certain physical rather than chemical features—the air is too warm, too moist, and too still; and if it has not these physical features it is not harmful. We all have sat in crowded assemblies, we all have experienced the hot, humid, still days of an American summer. We all know the effects of such air on our sensations. In what respect is hot, humid, still air harmful? To answer this question we must consult the records of many researches, chiefly on human beings, but partly on animals, that have been undertaken since Hermane, more than thirty years ago, observed that in crowded theatres and churches his own bodily temperature rose. The most recent of these researches is that of the New York State Commission on Ventilation, which has been in progress for the past two and a half years and is not yet completed. Notwithstanding that man is supposed to be a homothermal organism, there is a certain relationship between his bodily temperature and the temperature of his environment, even under the ordinary conditions of living. This has been shown by the New York Commission, which found that during the months of June and July the rectal temperature of its subjects at 8 a. m., living in their own homes, was conditioned by the average atmospheric temperature of the previous night. The variation of the bodily temperature was about 1° F. for 20° F. of atmospheric temperature, although it is probable that the degree of variation can be modified by the clothing. The Commission further found that, whatever the bodily temperature of its subjects might be, it was lowered by confinement in an atmosphere of 68° F. and 50 per cent relative humidity, and raised by confinement at 75° F. with the same humidity, or still more by 86° F. with 80 per cent humidity. The final average bodily temperature in a certain series of observations, where the subjects were confined in the observation chamber for from four to seven hours were:

68° F. (20.0° C.) 50 per cent humidity.........98.0° F. (36.7° C.)
75° F. (23.9° C.) 50 per cent humidity.........98.5° F. (36.9° C.)
86° F. (30.0° C.) 80 per cent humidity.........99.3° F. (37.4° C.)

Haldane and others have shown a greater elevation of bodily temperature in more extreme atmospheric conditions, and have pointed out the accompanying hangers of heat stroke. The relation between bodily temperature and external cold has not been so fully studied, but enough is known to warrant the statement that, in normal individuals at least, the bodily temperature can be to a considerable degree controlled by controlling the temperature and the humidity of the surrounding air. It is altogether probable that the same is largely due to febrile diseases. External temperature exerts likewise a definite effect on the circulatory system. The rate of the heart beat is increased in warm, humid, and decreased in cool, dry air. The New York Commission found the average rate of its subjects confined in an atmosphere of 86° F. and 80 per cent relative humidity to be 74, and in an atmosphere of 86° F. and 50 per cent humidity 66. Eastman and I have seen the pulse rate increase by 39—from 67 to 106—as the temperature of the air surrounding the subject rose from 74 to 110° F. and the humidity from 58 to 90 per cent. The important and involved topic of the relation of atmospheric conditions to blood pressure I must leave until the abundant data that have been accumulated by the New York Commission have been subjected to a more careful examination than has as yet been possible. Atmospheric conditions exert on the respiratory system effects of various kinds. On the rate of respiration a moderate degree of heat and humidity seems to be without effect, but there is some evidence that more extreme conditions cause a quickening of the breathing, and this is probably accompanied by more shallow respirations. The more extreme conditions too appear to result in a lowered concentration of carbon dioxide in the air of the pulmonary alveoli, although I cannot yet quote figures to demonstrate this The matter is, however, important, since a lowered carbon dioxide signifies an increased content of hydrogen ions, in other words increased acidity in the blood. Eastman and I are now investigating this point with much interest. The mucous membrane of the respiratory tract is markedly affected by atmospheric conditions. Exposure to heat causes increased swelling, redness and secretion in the nasal mucosa, and these effects are more marked when the humidity of the air is high. Exposure to cold reverses the effect. Little can be said at present regarding the action of atmospheric conditions on the nervous system. The New York Commission has expended much time and effort in endeavors to detect a possible influence of atmospheric variations between moderate limits on the ability to do mental work. The subjects were given such psychological tests as cancelling arithmetic figures, mentally multiplying three-place by three-place figures, typewriting, and more complex mental performances which involve choice and judment. The range of atmospheric variation was from a lower limit of 68^0 F. and 50 per cent relative humidity, and the upper limit of 86^0 F. and 80 per cent humidity. In some cases the air was kept quiet, in others by motion by electric fans. In neither the young men nor the young women subjects of these tests could there be detected any relation between atmospheric conditions and either the accuracy or the amount of mental work that was performed. The relation between atmospheric conditions and metabolic phenomena is not yet elucidated. A topic that is inviting is the possible relationship between atmospheric conditions and bacterial infections. Most of the experimental observations that have here been made relate especially to the action of temperature on the course of infections, and it has generally been found that high external temperature with accompanying pronounced increase of bodily temperature checks the progress of infections that are already existing. Somewhat lower temperatures (30^0 F.—35^0 F.) on the other hand, seem to favor the multiplication of the bacteria and the advance of the disease.

Some Studies on the Mode of Infection in Pyelitis of Infancy.—Dr. Richard M. Smith, Boston: There have been two antagonistic theories to explain the mode of infection of the kidney in pyelitis of infancy; one maintains that infection takes place through urethra, bladder and ureters; the other that the infection comes by means of the blood and lymphatics. Before discussing the relative merits of these two theories it might be observed that the disease is much more common in female than in male infants, the proportion being nearly three to one. The organism most frequently causing the disease is the colon bacillus, the percentage varying from 50 to 90 per cent. Directly against the ascending theory of infection are the facts that colon bacilli have never been shown to pass up the normal unobstructed ureter and that the colon and tubercle bacilli have been introduced repeatedly into the bladder and in the presence of a normal mucous membrane were excreted without causing damage of any kind. Ascending infection occurs only in the presence of obstruction to the outflow of urine and cannot occur if the sphincter of the ureter is normal. The theory of kidney infection by the blood and lymphatics rests upon much surer ground. The work of Theil and Embleton seems to show that bacteria may pass to the kidney by the lymphatics alone, appearing first in the fat capsule and being distributed through the kidney. If bacteria appear in the urine, that is if they have passed through the kidney, they must have reached the kidney by the blood stream. This latter procedure is what occurs in pyelitis so that there must be a blood infection. The direct sympathetic connection between the colon and the right kidney, which is the kidney most frequently affected in unilateral infection, had led some writers to believe that bacteria pass directly from the intestine to the kidney by these lymphatic vessels. This probably occurs and gives rise to infected kidney but not to pyelitis as we see it in infants. Pyelitis may follow this condition by secondary blood infection. The usual mode of infection in pyelitis is somewhat as follows: From the intestinal tract or some other source bacteria get into the lymphatics and then into the blood or possibly directly into the blood. They are transferred by the blood to the kidney. They may pass out of the body through the kidney without doing any harm or they may set up an infection at their point of excretion. They may during their passage through the kidney cause more or less damage to the various portions of the organ.

An infection of the kidney may take place by an extension inward from the pelvis, probably by lymphatic channels. The blood infection in nearly all the acute infectious diseases is so well known that no proof is needed for its support. The colon bacillus has been found in the blood by several investigators. The blood infection was always early in the disease disappearing later as in typhoid fever. The infection of the pelvis of the kidney from within, that is by bacteria brought to it by the blood and excreted seemed established and satisfied all the conditions except in offering an explanation for the greater frequency of the disease in females. This explanation is not hard to find for no mention has been made of a very important source of lymphatic and blood infection of the kidneys, namely, the pelvic organs. The lymphatic vessels draining the pelvic organs are connected by free anastomosis with the kidneys. These vessels drain through the thoracic duct into the blood. The female genital organs with the close proximity to the urethra, vulva, vagina, rectum, and the semi-closed character of the parts offers every advantage for the entrance and growth of the colon bacilli and other bacteria.

I have made seventy-one cultures from the vagina, vulva and urethra of forty infants and young children. One infant six hours old and all over eighteen hours, except one infant six days old and all showed growth from vaginal culture. All the vulvar and urethral cultures were positive. The first organisms to appear were streptococci and staphylococci and then small bacilli, not colon. Colon bacilli were found in vaginal cultures of infants as early as the fifth day. My findings are in accord with those of Schmidgall who found the vagina of new-borns sterile ten out of thirteen times and by the second day a profuse growth of cocci. The colon was isolated twelve times out of twenty-one in new-borns after the second day. She showed also that the vaginal secretions did not kill off the pathogenic organisms. A possible source of infection with colon bacilli or other bacteria is certainly present in the female vulva, urethra and vagina and a slight trauma may easily accomplish the entrance of organisms into the lymphatic vessels and blood and thus to the kidney. The source of infection in pyelitis, in the majority of instances, males and females together, is the gastrointestinal tract. Some cases may arise from infection in the skin, teeth or tonsils, or in some local septic process. Many cases in females, account-ing for the greater number in this sex as compared with the males, may arise from bacteria entering the blood often via the lymphatics from the urethra, vulva or vagina.

Diet and Growth in Infantile Scurvy.—Dr. Alfred F. Hess presented this study, in which he called attention to the fact that scurvy almost never developed among breast-fed babies, but was encountered among those who were fed on cow's milk and more especially those who received in addition some of the proprietary foods which were so commonly resorted to in the preparation of milk formulae. There had been considerable difference of opinion as to whether pasteurized milk could induce the scorbutic condition. In its report in 1912 the Commission on Milk Standards stated that pasteurization did not destroy the chemical constituents of milk and that it was not altered by exposure to heat under 145° F. for thirty minutes. In order to test the validity of this statement Dr. Hess made a test among a certain number of inmates of an infants' home, where all babies were fed on Grade A pasteurized milk which had been heated to 145° F. for thirty minutes. The babies had been receiving orange juice in addition which was discontinued. No other change in the diet was made. Almost all the babies who did not receive orange juice developed a more or less marked form of scurvy, whereas those who continued to receive orange juice remained entirely free from this disorder. Most of these infants had been in the institution from birth so that their condition both before and subsequent to the change could be thoroughly observed. The results of this investigation were published some two years ago and were questioned by some who were loathe to believe that pasteurized milk could in any way lead to scurvy and hence the observations were extended somewhat during the subsequent year. The results were the same, so the writer feels safe in saying that a diet of pasteurized milk leads to the production of scurvy in infants unless some antiscorbutic food is also given. The scurvy met with in infants fed on pasteurized milk was, as a rule, not of the florid type met with in infants fed for months on a proprietary food, but might be described as latent or rudimentary. There was a gradually increasing pallor, a failure to gain in weight, the development of some petechial hemorrhages, and in more marked instances, the subperiosteal hemorrhages. It would seem probable that this insidious type of the disorder was far more common than was generally recognized by physicians and that there were many infants suffering from slight nutritional disturbances which might be ascribed to this cause. When the pasteurized milk was replaced by raw milk the scorbutic condition improved, although it might be added that raw cow's milk was by no means comparable to orange juice as an antiscorbutic. It is not to be inferred from these conclusions that the use of pasteurized milk is fraught with danger, but merely that it is an incomplete diet for babies and must be given with antiscorbutic food. There are also secondary factors contributing to the development of scurvy, such as the individual variation depending upon hereditary characteristics, that is upon the amount of antiscorbutic material which the infant brings with it when it comes into the world. Secondary food factors also seemed to play a part. Malt preparation seemingly predisposes to scurvy and it seems that there is an intimate relationship between the development of scurvy and the amount of carbohydrate in the dietary. The sovereign cure for scurvy is orange juice, which is efficacious even when boiled for ten minutes; potato, one of the best antiscorbutics for adults, may be used in infant feeding where orangs juice cannot be readily obtained. For this purpose milk can be diluted with potato water, one tablespoonful of mashed potato to 1 pint of water, instead of the usual cereal decoction. In connection with this work observations were carried out to ascertain the effect of infantile scurvy on growth. This study embraced an interval of one year or more. Three periods might be distinguished in this investigation: a preliminary period of about three months, during which time the infants were weighed daily and measured every two weeks; a period embracing four months during which time the infants received a liberal diet of pasteurized milk and cereal, which differed from the previous period only in the fact that no orange juice was given; and an after period, lasting about six months, which dated from the time when orange juice or some other antiscorbutic was again added to the food. During the period when the antiscorbutic was discontinued particular attention was given to furnishing a sufficient quantity of food, and more cereal was given or the strength of the milk mixture was increased. It was found that although the infants continued to gain in most instances for a few weeks following the discontinuance of the orange juice, they soon reached a stationary plane and for months were unable to rise above this level, but increased in weight promptly when the antiscorbutic food was again added to their diet. It is very probable that infants cease to gain in weight at about eight months of age, during the third suarter of the first years of life for the want of this essential addition to their food, and fail to progress until mixed feeding is begun some months later. At present the rule may be said to be to add fruit juices to the infant's diet at about the sixth month, but it would seem that it should be given as soon as possible. There is no reason why a baby should not receive orange juice when a month old, and there are strong arguments in favor of such a procedure.

A number of infants in this group were also measured and as a result it was found that scurvy not only had a direct effect upon the weight but also upon the growth in length. This fact was of greater biologic interest than failure to gain in weight, for growth in length is a physiological impulse to which the individual clings with great tenacity, and it is rarely affected even when other functions are held in abeyance. Lack of growth, however, did not always play an essential part in the constitution of scurvy. Orange juice was found to be a corrective for the lack of growth as well as for the failure to gain in weight in this series of cases.

DISCUSSION

Dr. L. Emmett Holt, New York.—For several years past it has seemed to me that scurvy has been on the increase and during the last year this impression has been confirmed. We all realize the advantages of pasteurized milk but it has certain disadvantages which we should recognize. It is time that we as pediatricians express our disapproval of the present tendency of health boards to require the pasteurization of all milk. Such a course would be a mistake; it should not be made impossible to get pure, adequately certified raw milk. In considering the subject of scurvy we must take into consideration the fact that other factors besides pasteurized milk play a part. We must give due weight to the factor of hereditary predisposition. After all there are comparatively few cases of scurvy due to pasteurized milk among the poor because it is quite customary for them to give fruit and vegetables and other foods to babies at a comparatively early age. Ten or twelve years ago nearly all the cases of scurvy could be traced to proprietary foods and now they nearly all come from boiled milk. The number of cases is undoubtedly increasing or we would not be having this discussion. Physicians should be prepared to recognize scurvy when it comes under their observation. During the past year I have seen four cases that were not recognized until epiphyseal separation had taken place. We must emphasize the fact that if pasteurized milk is used we must also use an antiscorbutic and use it early and continually.

Dr. Charles Herrman of New York said: Dr. Hess has said that orange juice retains its antiscorbutic properties even when boiled while milk does not. This raises the question whether something more than heat may not enter into the problem.

Dr. Samuel Adams of Washington, D. C., said: All know that I am opposed to the commercial pasteurization of milk, and I hope the Society will take this question up and protect against the tendency to pasteurize all milk. The commercial pasteurization of milk is dangerous. Within the last ten days four cases of scurvy due to pasteurized milk furnished by the City of Washington, have come under my observation. In one instance I asked a dairyman to send raw milk. He did not do it and I asked him why. He said because the raw milk was bad. It would be quite as reasonable to buy a rotten steak because the butcher tells us it will not hurt us if it is cooked as it is to buy dirty milk and think it is all right because it has been heated. I am not opposed to the home pasteurization of milk.

Dr. A. D. Blackader, Montreal.—I would like to emphasize the importance of pasteurized milk as a cause of infantile scurvy. I have had two instances in infants in which the symptoms were obscure, chiefly scurvous symptoms, associated with a lack of growth, but there were none of the classical symptoms of scurvy. In both of these cases there was a rapid disappearance of the symptoms immediately following the administration of orange juice. When I saw these cases I thought I had found something new, but I will give Dr. Hess credit for having shown that this subacute form of scurvy is due to a deficiency of vitamines in the food of these young infants.

use it early and continually.

Dr. Henry L. K. Shaw, Albany.—I am in a position to see the reports of the various milk-borne epidemics which have occurred as a result of the use of raw milk in New York State. There have been seventeen epidemics directly traceable to milk. Septic sore throat and not tuberculosis is the dangerous disease conveyed by raw milk. In one of these epidemics there were seventy cases of septic sore throat. Some cases of this infection have been very serious and even fatal, and I think that a comparison of the evidence would show that the danger of scurvy is not comparable to that of septic sore throat. Scurvy is a disease very easily cured or prevented by the use of orange juice which can be safely added to the infant's diet after the third month.

Dr. Percival J. Eaton, Pittsburg.—I want to support the statements that Dr. Hess has made. Commercially pasteurized milk is not what one would really call pasteurized milk. Commercial pasteurized milk is milk that had been subjected to superheated steam at a pressure of 15 pounds and this is really sterilized milk. When one uses properly sterilized milk much better results are obtained than with the commercial product. The best method is to get properly certified milk and to sterilize or pasteurize it at home.

Dr. Samuel McC. Hamill, Philadelphia.—Dr. Hess has not said anything against pasteurized milk, he has said that pasteurized milk is a necessity today. I do not think it is necessary to come to the defense of properly pasteurized milk. But there is a tendency toward requiring the pasteurization of all milk and if this was done one could not longer get good raw milk, hence it seems that we should take some action. The medical profession is largely to blame for the attitude of health officers and dairymen; they are not prepared to give good certified milk. There is also some confusion as to just what good pasteurized milk means, and in any action taken by this Society it should be definitely stated what pasteurized milk means. I believe in the pasteurization of milk because we know that, while pasteurization today is frequently unsatisfactory, it is done in a better way than formerly. In Philadelphia in most instances it is done efficiently. The dangers of pasteurized milk are not to be compared with those of raw milk. Scurvy is a disease that is easily controlled and cannot be compared with the diseases that are milk borne.

Dr. Henry Heiman, New York.—We should have laws to govern the commercial pasteurization of milk. There is no way to tell whether we are getting pasteurized or sterilized milk. The probability is that when the mother gets pasteurized milk she gives it another pasteurization. One can give 5 drops of orange juice to a baby at the age of one month and other fruit juices as well, such as pineapple; this will furnish the missing link.

Dr. Philip Van Ingen, New York.—In connection with the emphasis that has been placed on the increase of scurvy since the introduction of pasteurized milk mention should also be made of the decrease in the infant death rate that has taken place as a result of the use of pasteurized milk.

Dr. Maynard Ladd, Boston.—I have seen a half dozen cases of scurvy in babies presumably taking raw milk and found that the milk had been overheated at the time it was warmed for feeding, so that these children were practically getting pasteurized milk.

Dr. Hess, in closing the discussion, said: I feel that the conclusion could not be drawn from this paper that pasteurized milk is not advantageous. The only conclusion that can be drawn is that pasteurized milk is not a complete food and all that is necessary to make it a complete food is to give orange juice or potato water, but not the potato water made from commercial potato flour. There is also a predisposition to scurvy which must be taken into consideration. Under the same conditions some develop scurvy and some do not, just as in beriberi, some get it and some under like conditions do not. As to whether an infant develops scurvy may depend on the mother and what food she has taken during pregnancy. Dr. Heiman has asked why boiling destroys the vitamines in milk and not in orange juice. That seems to depend on the medium in which the boiling takes place. The vitamines are not destroyed by boiling in water but are in fats such as the fats contained in milk. I had a control series which were fed orange juice and none of them developed scurvy. In the children that developed scurvy the feeding of raw milk produced a sharp reaction and an increase in weight.

As to what a vitamine is, Dr. Funk has isolated them from various food stuffs; they are nitrogenous substances. The term is good as indicating the essential part they play in growth and nutrition.

As to the vitality and general condition of the children upon whom our conclusions are based, these children have been in our care in most instances from birth and the environment is good. These children compare very favorably in every respect with normal healthy children elsewhere.

Sarcoma of the Kidney Treated by X-Ray.—Dr. Alfred Friedlander, Cincinnati.—It is generally accepted as axiomatic that the only hope in cases of sarcoma of the kidney in childhood lies in early nephrectomy. Even with this procedure the mortality is very high on account of the likelihood of metastases, even in those cases in which the operation itself is well borne.

This child, four years of age, was admitted to the pediatric service of the Cincinnati General Hospital on October 20, 1915. The history was one of increasing langour and lassitude with loss of appetite and anemia. Except for the condition of the abdomen the physical findings were not of moment. The entire left abdomen was filled by a tumor, extending from the costal margin in the nipple line to 3 cm. above the symphysis. The tumor extended 1 cm. to the left of the umbilicus. It was hard, distinctly nodular, apparently not tender to pressure, and could be moved forward by pressure from behind. Urinalysis on admission showed distinct microscopic hematuria. The blood showed a secondary anemia. Fluroscopic examination with the colon partly filled with gas showed a sharply defined dark shadow in the region normally occupied by the kidney. The X-ray plate of the lungs for the characteristic metastatic sarcomatous shadows was negative. X-ray treatments were given because of the apparent hopelessness of the case. These were given with the Coolidge tube on the front, back, and side of the tumor at each treatment, twenty treatments being given at intervals of about a week. The dosage was graduated, beginning with a treatment lasting ten seconds at a distance of 8 inches and a spark gap of 9 inches and increased to fifty seconds at a distance of 8 inches and a spark gap of 9 inches. Before each X-ray treatment the child was given full doses of potassium citrate for a day. There was no toxemia nor increase of the blood in the urine. After the seventh treatment it was noticed that the tumor had decreased very markedly in size. Later the child had an attack of influenza and then one of measles and death occurred. Autopsy showed sarcoma of the left kidney with small metastases in both lungs and in the liver.

The pathologist's report was presented which stated that the stained sections showed the most widespread and generally diffuse necrotic changes with no evidence of inflammatory reaction. Even the stroma showed degenerative changes, associated with irregular aceas of edema. The parenrhyma was almost completely necrotic and showed almost no evidence of structure. In the areas in which some tumor structure persisted the appearances were those of alveolar sarcoma, and in these areas short spindle cells and round cells were present, chiefly the latter. The fact that the whole necrotic process was so widespread in so large a tumor mass; that there was no evidence of vascular thrombosis in the main vessels, and no evidence of infarction; and the fact that the degenerative process appeared to be a gradually progressive one indicated that the X-ray treatments were at least prtially the cause of retrogression. This was a particularly unfavorable case and it seemed justifiable to say that if nephrectomy was contraindicated in a case of sarcoma of the kidney the X-ray should be given a thorough trial.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE

Orthopedic Surgery

Under the Charge of

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and

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Two Cases of Bone Graft, by Jas. T. Nix, New Orleans Med. and Surg. Jour., May 1916. The first patient had a compression fracture of the body of the ninth dorsal vertebra, and suffered from severe pains over the lower thorax and upper abdomen and had decreased sensation and impaired motion in the lower extremities. A bone graft was placed spanning the seventh to the eleventh vertebra. He wore a cast for two months following the operation and returned to work completely cured after the third month.

The second case was one of tuberculosis of the first and second lumbar vertebrae. A bone graft was placed in the spines of the eleventh dorsal to the fourth lumbar vertebra. Ankylosis has resulted and an apparent cure of the disease.

An Arthroplasty of the Elbow, by R. Brown, California State Jour. of Med., April, 1916. The author reports a case of bony ankylosis of the elbow with the arm in full extension. Almost perfect function was secured by an arthroplasty according to Murphy's technic. Brown advocates the aspiration of acutely infected joints and the infection of formalin in glycerine.

Heliotherapy, by Spaulding, Jour. of the Med. Soc. of N. J., March, 1916. Rollier was the first to use the sunshine treatment scientifically and to his splendid work is due the recent interest in this method of treatment of surgical tuberculosis.

Patients are exposed naked to the sunshine. The exposure is partial and brief at the beginning, but the area of the body surface, and the time of exposure are gradually increased until the entire body may be exposed from four to six hours a day. The skin should become brown without blistering. If patients are wearing plaster casts for tuberculosis of bones or joints, windows should be cut in the casts over the diseased area and local exposure to the sunshine be made.

If it is impossible to expose the entire body to the sun, at least the diseased areas should be exposed.

Cases of pulmonary tuberculosis have been treated favorably by heliotherapy. Contra-indications are high temperature, hemophysis, and very advanced symptoms of the disease.

Heliotherapy has been used successfully in cases of lupus, fistula, and in numerous forms of septic wounds and sinuses, and in chronic leg ulcers.

Richter claims that arc light is as efficient as heliotherapy, but this remains to be proved.

Quiet Hip Disease, by Henry Ling Taylor and Wm. Frieder, Surg. Gyn. and Obstetrics, February, 1916. The authors describe twenty-two cases of this affection, variously known as quiet hip disease, Perthes' disease, osteochondritis, deformans juvenilis. The pathology is not clear. There is a dysostosis of the head of the femur from some unknown cause. The Roentgenogram shows a thin, flattened apiphysis of the head, which may appear to be divided into several pieces and which tends to creep over the top of the neck toward the trochanter. The epiphyseal line is irregular and broader than normal. There is no erosion or bone atrophy such as are seen in tuberculosis.

The affection is usually noticed in children from five to ten years of age. It comes on insidiously and without history of trauma. A slight limp appears. At first there is little or no loss of mobility of the hip and no muscle spasm. Later, both of these symptoms may appear. Pain may be present but is rarely a conspicuous symptom. In the majority of cases there is a shortening of one-fourth to one-half inch.

The symptoms last from one to three years, and the child recovers with excellent use of the joint although it remains somewhat altered in shape. Ankylosis does not occur.

The treatment is simple and should be directed only toward relief of symptoms. A short spica should be applied for short periods to relieve the pain and muscle spasm. Or the patient may go about on crutches if the deforming process is progressing rapidly. But long periods of recumbency are detrimental.

Quiet hip disease in childhood is undoubtedly one cause of osteoarthritis of the hip in adults.

The Growing Interest in the Vitamines.—Study and research are emphasizing the importance of these vital substances in foods that Dr. Casimir Funk has called vitamines. Much difficulty is being encountered in ascertaining the chemistry of these products owing to their complex character and intimate association with other chemical bodies. However, progress is being made and we shall soon know a great deal about their composition and nature that is now hidden in obscurity.

With reference to the action of the vitamines, very little as yet is definitely known except that they bear a certain relationshin to the carbo-hydrate metabolism. Dr. Funk has found, according to an editorial writer in the Medical Record (June 10, 1916) that giving animals food composed largely of carbohydrates brings on an earlier appearance of the symptoms of deficiency diseases. For instance, if a pigeon is fed on polished rice it is possible to estimate approximately when the symptoms of beriberi will appear after a given quantity of rice is metabolized. Dr. Funk has confirmed this with an traificial diet composed of carbohydrates, and has also found that the blood sugar content in avian beriberi is greatly increased. This fact has a practical bearing in infant feeding; thus, it must be borne in mind that a certain amount of vitamine can only take care of a limited amount of carbohydrates and when the starch is increased in the diet the amount of vitamine-containing foodstuffs must be increased in proportion.

A second fact which has been established in connection with the metabolism in deficiency diseases is that in the absence of vitamines not only a negative nitrogen balance is obtained, but the whole metabolism goes wrong; this is particularly noticed in the negative balance of inorganic constituents like calcium, phosphorus, and sulphur. Schauman has recently shown that the addition of vitamine puts the whole metabolism again on a normal basis and this fact is of special importance for the understanding of certain conditions like rickets in children. It has been found further that vitamine, when properly prepared and added in sufficient amount to polished rice, will make the latter diet complete. Dr. Funk has shown, in addition, that no animal was yet found able to live more than a short time on a vitamine-free food and that an artificial diet composed of casein, starch, fat, sugar, and all the necessary salts will produce a deficiency disease of some kind according to the animal chosen. To this diet all known lipoids, cholsterol, various proteins, and all sorts of salts can be added and nothing can save the animal or man from certain death unless vitamine is added. When all these facts are properly classified, correlated and understood it seems certain that we shall have a wealth of data of the utmost importance in helping us not only to understand many metabolic disorders but also to effect their correction.

The Treatment of Infantile Paralysis.—The perorted successful use of adrenaline in the treatment of acute poliomyelitis will meet an urgent need if a number of recoveries sufficient to afford a fair test can be recorded. Indeed, in a recent editorial article (New York Medical Jaurnal, July 8, 1916) we referred to the unfortunate paucity of curative measures at our disposal. In the recently published edition of Osler and McCrea's "Modern Medicine," Farquhar Buzzard speaks in the same vein when he states: "We are unacquainted with any method of combating the acute attack and must be content to treat the initial stage similarly to that of any acute infective disease. When the disease is epidemic," continues this distinguished neurologist, "and constitutional disturbances suggest the possibility of an attack, the administration of hexamethylenamine is worth a trial." The same reserve was fittingly observed by Simon Flexner in his recent public address, when speaking of the shortcomings of hexamethylenamine, and of his own serum, he said: "The experiments have not yet reached the point where the new drugs are applicable to the treatment of human cases of infantile paralysis."

We urge that a fair and impartial trial be given to adrenaline, not only because its use was suggested by so competent an authority as Meltzer, and because of the favorable results obtained in forty-one cases by Doctor Bermingham at the New York Throat, Nose, and Lung Hospital, but on account of its intrinsic merits as a pharmacological entity. To realize its possible worth, however, its users must place the problem on a higher scientific plane than the reported statement that the direct injection of adrenaline into the spinal canal acts 'as a wonderful tonic" when "reaching the ervous tissues" and "removes pressure from them" and thus "places nature in a position to do the rest." Much evidence is available to show that we have, in all probability, in adrenaline, thus used, a direct activator of the antitoxic function of the blood in the central nervous system, the main seat of morbid activity of the veins.

Brown-Sequard, Abelous, Langlois, Albanese, Zucco, Charrin, and others have long emphasized the importance of the ductless glands as factors in the active protection of the body against disease. While Charrin, nearly twenty years ago, wrote, "As to antitoxic functions, one may depend upon a series of viscera, first of all the liver, the pituitary, the adrenals, the pancreas, the kidneys, the spleen, etc.," Albahary, as recently as 1913, in a paper read before the Paris Biological Society, stated that "as regards the neutralizing secretions that the organism can oppose to the action of a toxin in general, we know today that this role belongs mainly to the ductless glands." Sajous, however, identified the role of the adrenal secretion in the process as that of a catalyzer, the purpose of which is to activate oxidation and thus enhance the antitoxic power of the digestive ferment which, both in phagocytes and the plasma, endows the blood with defensive properties. The influence of the adrenal principle on oxidation was confirmed, in 1912, by Bernstein and Falta; while the labors of Abderhalden have confirmed the view that a digestive ferment is the active protective agent in our defensive functions. Briefly, the evidence goes to show that adrenaline should not be looked upon as an antibody, but as an activator of antibodies.

How does the adrenaline penetrate the central nervous system to enhance the antitoxic power of the blood therein? On the basis of Ehrlich's methylene blue injections, Sajous, in 1903 and 1907, pointed out that bloodspasm laden with the adrenal principle circulated in the nervous elements, traveling upward as does tetanotoxin. Lichwitz, in 1908, confirmed this view, having also observed that "adrenaline traveled from the lower extremities to the upper when these were only connected by nerves." Recently the presence of adrenaline in nerves was likewise discerned by Macallum, of Toronto, with the aid of silver nitrate solution injections.

This evidence, to which much could be added, will suffice to indicate that we may have in adrenaline the keynote for a successful treatment of acute poliomyelitis. It will undoubtedly increase the defensive reactions of what active antibodies are formed. This suggests that it might sufficiently increase the activity of Flexner's serum to give it the potency it needs to render it effective, not only very soon after infection, but as long as the latter is active. That the hexamethylenamine wisely given simultaneously by Doctor Bermingham is aided indirectly by the adrenaline, is also probable.—(Editorial, N. Y. Med. Jour, July 29, 1916.)

Operative Treatment of Infantile Paralysis.—Mark H. Rogers (American Journal of Orthopedic Surgery, July, 1916; New York Med. Jour.) reports the operative results in 130 cases of infantile paralysis, the work having been done by the orthopedic staff of the Massachusetts General Hospital. He finds that, in children when deformities are not developing, the fewer the operations performed the better; that, in adults, good results are obtained by tendon transplantation with and without bony resection; and that astragalectomy is preferable to arthrodesis of the ankle joint in cases presenting deformity.

Operative Treatment for the Disabilities and Deformities Following Anterior Poliomyelitis, as Practiced at the Hospital for Ruptured and Crippled.—Charlton Wallace (American Journal of Orthopedic Surgery, July, 1916; New York Med. Jour) reports success with the Soutter and Whitman operations, the transplantation of the hamstrings for quadriceps paralysis, and the grooving of the tibialis anticus and transplantation of the extensor proprius hallicus into the calcaneoscaphoid ligament for equinovalgus. He reports poor results with arthrodesis in children. He believes that many operations would be unnecessary if the proper brace treatment was instituted.

Operative Treatment of Infantile Paralysis.—R. Tunstall Taylor (American Journal of Orthopedic Surgery, July, 1916; New York Med. Jour.) believes that tenotomy, myotomy, and tendon lengthening should be performed only if a transplantation cannot be done; that tendon shortening is successful if the tendon is anchored in a periosteal or bone groove; tenodesis is justifiable when the muscle of the tendon has degenerated beyond functional use; extraarticular and intraarticular silk ligaments should be preferred in flail joints where no impotent tendons are obtainable for a tenodesis; arthrodesis should be used only in flail joints and not preferred ot tenodesis and extra-articular silk ligaments; articular transplantatin for calcaneus gives no increase in power of extension unless a tendon transplantation accompanies the operation; astragalectomy should be used only when other methods fail; and tendon transplantation is probably most successful in partially paralyzed cases.

Treatment of Summer Complaint Among Children.—R. C. Youngblood (Texas Medical Journal, July, 1916; New York Med. Jour.) divides the treatment into dietetic and medicinal. Breast milk is the ideal food for infants. As a substitute, condensed milk may be used. Barley water, rice water, oatmeal gruel, and occasionally, orange or beef juice should be added. For the medicinal treatment, summer complaints among children are divided into two groups: Gastroenteritis (cholera infantum) and ileocolitis. In gastroenteritis, morphine sulphate, grain 1-50, strychnine, grain 1-250, and atropine, grain 1-1000, repeated in two hours if necessary, should be administered. If there is improvement, we give one tenth or one sixth of a grain of calomel every half hour for six doses, followed by two teaspoonfuls of castor oil; later, zinc sulphocarbolate in one sixth to two grain doses every two hours until convalescence is well under way. In treating ileocolitis we use calomel and castor oil, as stated above. If the fever reaches 102.5 degrees F. again, another dose of castor oil is indicated. Where there is mucus, blood, and dark green stools bismuth subnitrate is of immense value. The dose is ten to twenty grains every two hours. If black stools do not appear in twenty-four hours, add precipitated sulphur, one grain, to every dose. For the tenesmus we exhibit paregoric and enemas of normal salt solution and starch; in the presence of high fever, colonic irrigations with normal salt solution.

A Rural Remedy for Whooping Cough.—T. Mark Hovell, of London, at the repeated request of many friends, communicates to the British Journal for July 1st a rural remedy for whooping cough which appears to be not known generally to the profession. It consists of peeling the cloves of garlic, as the segments of the bulb are called, cutting them into thin slices, and wearing the munder the soles of the feet between two pairs of socks, for if placed next the skin the pressure produced by walking is apt to cause irritation. The garlic can usually be smelt in the breath within half an hour after the slices have begun to be worn, and the whoop and spasm usually disappear within forty-eight hours. The garlic should be worn for a week or ten days or longer, according to the severity of the case. Among the French Canadian habitants, we know that onions are used in exactly the same way. Garlic may also be administered by eating it as a form of bread sauce, made by chopping up the cloves when peeled, boiling them in milk, and mixing them with bread crumbs.

Fractures in Children.—Jacob Grossman (Medical Record, July 8, 1916) concludes from a study of 200 cases that the commonest cause of error in diagnosis in choldren is incompleteness of fracture when it is of the fissure or torsion variety. The most constant diagnostic sign is localized bone or "pencil" tenderness. These incomplete fractures, require the same treatment as complete fractures, with a less prolonged period of immobilization. The tendency to heal is more intense than in adults and the immobilization period is shorter; refusal of a child to use a limb for any length of time should arouse suspicion of fracture; proper retention is as important as proper reduction. Early massage, active and passive movements are of importance.

Aminoacid Nitrogen in the Blood of Children.—C. J. V. Pettibone and F. W. Schultz (Jour. A. M. A., July 22, 1916) made determinations of this nitrogenous constituent of the blood of children under a variety of conditions f health and disease and showed that, while the average figure was somewhat below that for adults, there was no consistent or characteristic variation in any of the diseases studied. Further, fever did not cause any typical variation in ts amount.

An Unusual Epidemic of Whooping Cough.—P. Tissier (Bulletin de l'Academie de medicine, June 6, 1916) writes concerning the whooping cough epidemic which prevailed in Paris and its outskirts from April to July, 1915, and from December, 1915, to the time of publication. Of 144 cases treated by the author no fewer than ninety-four were in adults. The cases occurring in children were often contracted from the parents. Though not, as a rule, immediately grave, the disease, in adults, ran a protracted and tedious course and was fraught with serious consequences, especially in the aged, in those already afflicted with bronchopulmonary or cardiac disease, and in soldiers infected while on a furlough and later transmitting the disease afar. The condition being mild at the outset, the adult patients often failed to interrupt, or left off only a few days, their customary occupations. The majority of cases seen had already been diagnosed as grippe, nervous cough, tonsil cough, or reflex spasmodic cough. The actual nature of the condition was shown, however, by the paroxysmal cough, frequently with nausea and at times vomiting, the absence of bronchial disturbance, and of marked involvement of the upper respiratory passages, the ready yielding of the condition to the ordinary treatment for pertussis while refractory to that for grippe or bronchitis, and especially, its contagiousness. The pertussis contracted by children from their parents was always typical and generally severe. The disease in adults constantly began with slight coryza, sore throat or hoarseness, followed later by dry, paroxysmal cough, seldom with expectoration, which consisted of saliva alone. All the patients experienced a tickling sensation in the throat which obliged them to cough. The paroxysms then became more and more frequent, though the cough remained dry and was not, as in children, accompanied by suffocating attacks. Treatment with bromoform, chloroform, iodoform, or fluoroform proved effectual, early administration being, however, necessary to ward off bronchopulmonary complications, against which these remedies are powerless.

Medical Care for Children in Institutions.—According to an editorial in the Amer. Med., in the investigation of the various public charities of the city of New York by a Commissioner of the New York State Board of Charities, many facts were brought out reflecting upon the medical attention given in institutions for children. It has long been recognized that institutions are regrettable, though necessary, evils at the present time. The congregation of large groups of children under institutional care is in itself an insanitary procedure and prejudicial to the health interests of the inmates.

Unfortunately, the attending staff of many large institutions for children is inadequate in numbers, and in consequence justice cannot be done to the maintenance of the health of the children. It is practically impossible for one physician to give proper care and attention to a thousand or eight hundred, particularly when the work forms but a small portion of the daily service of the physician. Under such circumstances regular inspections of the children at frequent intervals are a practical impossibility.

The fact that at one institution for boys about 100 cases of diseases of the eyes were present is indicative of a lack of medical inspection. The frequent finding of ringworm, eczema, pediculosis, otitis, and wretched dental conditions makes clear that improvement is urgently needed in the medical and dental care of institutional children.

A lack of clerical assistance and almost complete lack of laboratory facilities render it difficult to secure proper records and indeed ofttimes full diagnosis.

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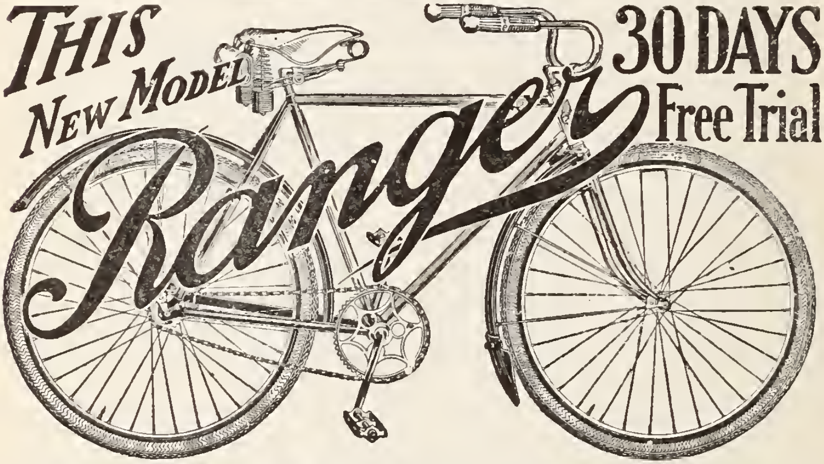

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EDITORIAL

THE EDITOR OF PEDIATRICS.

Dr. William Edward Fitch, the editor of Pediatrics, as a member of the Medical Reserve Corps of the U. S. A. with the rank of first lieutenant, is now serving his country at Fort Terry, Plum Island, New York. He was assigned to active duty and proceeded to Fort Terry to assist in attending to the Boy's Camp established there. On the completion of his term of service, that is when the Boy's Camp was dismissed, he was requested to take charge of the regulars for a term of three months. By obeying the call of duty, Dr. Fitch has been compelled to leave his practice and other interests. However, his journal will be carried on as usual.

It is hoped that Dr. Fitch will return to his civil duties, refreshed and exhilarated by his new experience, and that the consciousness that he served his country in her hour of need, will render him better fitted than ever to resume the avocations of the ordinary citizen.—C. A. C.

ACUTE ANTERIOR POLIOMYELITIS.

During the past few days, poliomyelitis has waxed and waned greatly in accordance with the state of the weather. When the temperature has been high and the air surcharged with moisture, the number of cases of the disease and the mortality therefrom has gone up. Per contra, when the air has been cool or fairly cool, the prevalence of the malady has decreased. However, this has been always so and may be attributed largely to the lowering of vitality especially in very young children, brought about by enervating atmospheric conditions with high humidity, which perhaps render them more susceptible to contracting infection, and certainly make them less able to successfully withstand an attack.

An interesting phase of the epidemic has been the large number of adults who have become infected. There have been several of these. Also it would appear that adults are capable of conveying the infection either as hosts or by carrying the virus on their person or clothes. A member of the staff of Pediatrics was afforded the privilege of visiting the Willard-Parker Hospital, where of course, he had the opportunity of viewing cases in various stages. He was very favorably impressed with the management of the institution and with the care taken of the inmates. So far as treatment of the acute stage is concerned, it may be said to be mainly expectant and alleviative. There is no specific or anything approaching a specific in the treatment of poliomyelitis. Serum, human if possible, is being given a trial, but as yet the time is too short to make a definite statement with regard to its effects. Adrenalin, according to some who have used it, has produced excellent results, but as in the case of serum, the test has not been sufficiently prolonged to speak dogmatically concerning this remedy.

Undoubtedly, the chief means of controlling the spread of Poliomyelitis and mitigating its severity, lie in preventive measures. If, however, the disease is mainly conveyed by personal contact, the difficulties in the way of carrying out efficient preventive methods are very great. There may be many carriers who have had the disease but so slightly as not to be diagnosed, and yet as sources of infection, they are a perambulating menace to the community. Still, there are certain obvious means which if carefully carried out, would go far to control the spread of the epidemic. It is allowed, on all hands, that the germ of the disease lurks in the upper respiratory tract and it follows that the secretions of the nose are possible or rather probable agents for conveying the infection. Consequently, the noses of young children should be kept scrupulously clean and with this desirable object in view, they should be washed out two or three times a day with a solution of salt water. Mothers in every place in which poliomyelitis exists, should be instructed to perform this service or to insist that it is done. Cleanliness should be the slogan in the campaign against poliomyelitis. Dust holds the germs and therefore dust should be abolished. In municipal, domestic and personal hygiene, lie the best known means of fighting poliomyelitis with any hope of success.

THE CAUSATION OF RICKETS AND ITS TREATMENT.

Rickets is a disease of malnutrition but how comes the malnutrition? Funk believes that with scurvy, beriberi and pellagra it may be classed as a deficiency disease, that is, it is due to an absence or lack of ''vitamines'' principles contained in milk or other fresh foods which are essential for good nutrition.

Eric Pritchard of London, Eng. recently read a paper before the Royal Society of Medicine, London, published in the present issue of Patratrics, in which he describes his views with respect to the causation of rickets. He is of the opinion that the condition is brought about by an excess of food which is disposed of in such a manner as will inflict the least possible injury on the organism as a whole. One of these methods depends on the short-circuiting of the oxidation processes, in fact, on the production of incompletely burnt-up products of combustion. This floods the blood with acid bodies of large molecular size, and is fully described in the paper referred to above. The injuries inflicted on the organism by this method of disposal are those which are included in the term ''acidosis'' which is in his opinion the most potent cause of rickets.

Pritchard is careful to point out that by excess of food, he does not mean the term to be interpreted in its popular acceptation. He means by the term relative excess, that is to say, a redundancy over and above that which is required for physiological purposes.

It will be thus observed that Pritchard's theory with regard to the causation of rickets is not in agreement with that of Funk, and others who believe that the condition is caused by a deficiency in food and not to excess.

INFANTILE SCURVY.

It is becoming more and more borne in upon the minds of those who have made a study of the matter, that diet plays a most prominent part in the causation, prevention and treatment of disease. Both rickets and scurvy are conditions brought about by errors of diet but while scurvy is almost universally regarded as a deficiency disease, probably, due to an absence or lack of vitamines, there are doubts as to the dietetic faults which cause rickets.

With regard to infantile scurvy, Dr. Alfred Hess in the American Journal of Diseases of Children has written a series of papers on infantile scurvy and in the issue of August 1916, concludes in part as follows: Although pasteurized milk is to be recommended on account of the security which it affords against infection, we should realize that it is an incomplete food. Unless an antiscorbutic, such as orange juice, the juice of an orange peel, or potato water is added, infants will develop scurvy on this diet. This form of scurvy takes some months to develop and may be termed subacute. It must be considered not only the most common form of this disorder, but the one which passes most often unrecognized. In order to guard against it, infants fed exclusively on a diet of pasteurized milk should be given antiscorbutics far earlier than is at present the custom, even as early as at the end of the first month of life.

Hess in a former paper pointed out that the symptoms of infantile scurvy bore an intimate relationship to those of other deficiency diseases, more particularly beriberi. Scurvy then is a deficiency disease and is probably caused by an absence or lack of ‘‘vitamines.

OPPORTUNITIES FOR YOUNG PHYSICIANS IN THE ARMY MEDICAL CORPS

By a recent ruling of the War Department the age limit for entrance to the Medical Corps of the Army has been raised from 30 to 32 years. Owing to the increase in the army which became effective July 1, there are now 200 vacancies.

The Army Medical Corps offers an excellent field for the recent graduate. His position is permanent. From the outset his pay is $2,000 a year, with quarters or an allowance of $36 a month in lieu thereof; he is also given fuel and light or allowance therefor; when on government duty he receives liberal traveling expenses; he has also a leave allowance of one month per year on full pay. His income is not dependent on the caprice of patients.—Jl. A. M. A.

PEDIATRICS

ORIGINAL ARTICLES

POLIOMYELITIS

(Infantile Paralysis)

BY WADE H. FROST

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What is Known of its Cause and Modes of Transmission*

In view of the present outbreak of infantile paralysis (poliomyelitis) in New York City the following discussion of the etiology and epidemiology of this disease is taken from Hygienic Laboratory Bulletin No. 90, with some revision by the author. This discussion, based on an extensive review of the literature and on the author's personal studies of the epidemics previously reported, is presented as a summary of the present knoyledge concerning the cause and transmission of poliomyelitis, with such opinions as seem justified by the facts.

Means of Transmission—The essential facts brought out by the experimental studies of poliomyelitis are the following:

The specific cause of poliomyelitis is a minute microorganism, a so-called virus, capable of cultivation in vitro on suitable media.

The virus derived from human cases is pathogenic for apes, producing in them characteristic effects essentially similiar to those produced in man. As is the case with many other pathogenic organisms, considerable variations in virulence are noted.

The only animals other than apes which have been found definitely susceptible to the infection are rabbits. The suceptibility of these animals to the infection appears highly inconstant, and the effects produced are both clinically and anatomically quite different from those produced in monkeys. Romer has found guinea pigs susceptible to an infectious paralytic disease strikingly similar to poliomyelitis, and Neustaedter has recently made observations suggesting that the guinea pig may at times be susceptible to poliomyelitis.

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*Reprint No. 350 from the Public Health Reports. (July 14, 1916, pages 1817-1833.)

Sources of the Virus—In the human body the virus has been found: (a) In the tissues and secretions of persons dead of poliomyelitis, namely, in the brain, the spinal cord, the mesenteric glands, the tonsils, and in the mucous secretions of the naso-pharynx, the trachea, and the intestines, (b) In the secretions of persons acutely ill with poliomyelitis, namely, in the naso-pharyngeal secretions and in washings from the rectum.

The infectivity of these secretions has been demonstrated not only in persons suffering from the clinically typical paralytic forms of poliomyelitis, but also, though less conclusively, in the secretions of those suffering from mild, clinically indefinite, abortive forms.

(c) In the naso- pharyngeal and intestinal secretions of persons convalescent from acute attacks of poliomyelitis. Although the total number of recorded examinations of convalescents is as yet small, the results of studies by Kling, Wernstedt, and Petterson suggest that in a very large proportion of persons recovering from poliomyelitis these secretions remain infective for several weeks or even months.

(d) In the naso-pharyneal secretions of apparently well persons who have been more or less intimately associated with other persons suffering from poliomyelitis, chiefly in epidemic foci. No figures are available as yet to form an estimate of the proportion of persons who, upon exposure to infection with poliomyelitis, become "carriers," or of the relative proportions of carriers and clinically recognizable cases of poliomyelitis in an epidemic focus. The technical difficulties in the way of demonstrating the virus, involving the injection of filtrates into monkeys, are such that extensive statistics upon this point can hardly be expected in the near future, unless the technique of demonstration can be greatly simplified.

Outside of the human body the living virus has been demonstrated in nature only in the dust of rooms occupied by poliomyelitis patients and presumably contaminated with their secretions, and possibly (though the demonstration is not fully convincing) upon articles recently handled by persons suffering from poliomyelitis.

In brief, there is at present experimental proof of the following sources of infection: The secretions of persons ill with poliomyelitis, those convalescent from the infection, and "passive carriers"—that is, persons apparently well who are harboring the specific virus and discharging it in their secretions.

Avenues and Vehicles of Infection—As to the avenues through which the virus may enter the human body to cause infection, inferences may be drawn chiefly from experiments upon lower animals. Monkeys may be experimentally infected by injection of the virus directly into the brain, or the subdural space, into the general circulation, the peritoneal cavity, or even the subcutaneous tissue. They may also be infected by rubbing the virus upon the scarified mucous membrane of the nose, and even by rubbing it upon the uninjured mucous membrane. Also,by the use of massive doses of the virus and under quite artificial conditions, it has been found possible to produce infection by feeding monkeys through a stomach tube.

Of the various methods of infection experimentally shown to be possible, infection through the nasal mucosa appears to be the most constant under conditions which might be expected to be approximated in nature.

Concerning the natural vehicles of infection, experiments performed under laboratory conditions are necessarily somewhat inconclusive. The infectiousness of the nasopharyngeal and intestinal secretions of the infected persons and the susceptibility of monkeys to infection through the nasal mucosa indicate very strongly that the disease may be transmitted in nature by such vehicles as may serve to transmit these secretions from infected persons to the respiratory (or digestive) tracts of others—that is, by more or less direct personal contact. The resistance of the virus to the influence of drying and sunlight suggests the probability of the infective agent being conveyed in dust and in fomites, a suggestion strengthened by the experimental evidence of the infectivity of the dust from the sick room.

Experiments showing the possibility of transmitting the infection from monkey to monkey through the agency of a biting fly, Stomoxys calcitrans, and in one instance through the bedbug, have added considerable weight to the hypothesis that poliomyelitis is in nature an insect-borne disease. However, since the trasmission of the disease through these insects has proven possible in only isolated instances and under highly artificial conditions, these experiments do not warrant the conclusion that stomoxys or other insects play any important part in the natural dissemination of the disease in man.

On the whole, the experimental evidence, taken alone, while not excluding other means of transmission, points to the conclusion that poliomyelitis is a contagious disease, spread from person to person through interchange of infectious secretions, the cources of infection being the clinically definite and clinically indefinite acute cases of poliomyelitis, convalescents, and passive human carriers.

Epidemiological Characteristics— To give the epidemiolcgical characteristics of poliomyelitis in general terms is difficult, not only because of the wide variations noted in different epidemics, but also by reason of the comparative paucity of statistics affording but a slender basis for generalization. Still, making due allowance for numerous minor exceptions which can not be noted in a brief discussion, certain general epidemiolcgical characteristics stand out as fairly well established.

1. Geographic distribution.—Poliomyelitis is, even in the light of our admittedly imperfect statistics, known to be of practically world-wide distribution. Without attempting to enumerate the localities from which it has been reported, the following examples of localities where the epidemics have occurred in recent years may serve to illustrate how far the occurrence of epidemics must be independent of such special climatic or other conditions as are peculiar to any restricted part of the globe.

Since 1905 epidemics have occured in Europe from Scandinavia to the Mediterranean, from the British Isles to the Danube; in North America from Alaska to Alabama, throughout the breadth of the continent; in the West Indies; in South America; in Australia, and in the South Sea Islands. Thus the disease has occured in more or less extensive outbreaks in both Eastern and Western Hemispheres, under extremes of latitude from the Equator to the northern Temperate Zone. It is noteworthy, however, that the most extensive outbreaks recorded have been in the northern portions of Europe and in the northern section of the United States, and Canada. The southern sections both of Europe and the United States, while not immune, have suffered less severely.

2. Seasonal prevalence.—In respect to season as to climate, poliomyelitis occurs under widely varying conditions. In the latitude of the northern United States cases have occured, dur-

ing the last few years, in every month of the year. Nevertheless the disease has a very distinctly characteristic seasonal prevalence, very constantly reaching its maximum both of sporadic and epidemic prevalence during the summer and autumn months usually during the late summer and early autumn, and declining markedly during the late fall and early winter, to reach its lowest prevalence in midwinter and spring. In the Southern Hemisphere the disease reaches its maximum prevalence from December to May, the months corresponding to the summer and autumn of northern latitudes. On the Pacific coast of the United States, where the difference between summer and winter is more in the matter of rainfall than temperature, poliomyelitis has occurred mostly during the dry summer season.

On the whole this seasonal prevalence may be accepted as one of the most constant characteristics of the disease. In respect to the season of maximum prevalence poliomyelitis is in contrast with the more common diseases generally believed to be transmitted by direct contact and to find access to the body through the respiratory tract, such as scarlet fever, measles, diptheria, whooping cough, etc., which usually reach their highest prevalence in the autumn, winter, and spring. In this respect, its seasonal prevalence, the disease more closely resembles infections of the digestive tract and diseases transmitted by such insects as are most prevalent in summer.

3. Sporadic and epidemic occurences.—Poliomyelitis may be considered to have been endemic, for a considerable number of years at least, in the United States and Europe. Although the statistics are very fragmentary, it would seem a conservative statement that cases now occur every year in every State, and probably in every large city of the United States. Also, at least as regards the large cities, there is good reason to believe that this has been true for a number of years—since long before the disease began to attract attention by its occasional occurrence in epidemics.

This fact is of importance as indicating that the recent epidemics can not be ascribed off-hand to the introduction of a new infection, and that there probably are scattered throughout the country reservoirs of infection, capable of giving rise to the widely scattered so-called sporadic cases.

4. General characteristics of epidemics.—In undertaking any generalizations upon the characteristics of epidemics of poliomyelitis, it must be emphasized that to almost any broad

general statements there are numerous exceptions, since epidemics vary most strikingly. For example, between the outbreak reported from Hancock County, Iowa, and that in Cincinati, Ohio, are such radical differences as might be expected between epidemics of two essentially different diseases. Yet, with due regard to the exceptions, the following are believed to be, in general, the essential characteristics of epidemic outbreaks of poliomyelitis, as shown by numerons studies.

(a) Irregular geographic distribution of epidemic foci.—Almost if not all epidemic diseases affecting man, even those transmitted chiefly from the lower animals or through insects, are disseminated by travel and traffic, and, in their spread from a given point, are naturally expected to follow the chief routes of traffic. It has, however, been noted of epidemics of poliomyelitis that they are often, if not usually, of irregular occurrence, not showing the distribution which would be expected as the result of dissemination along the main highways of traffic.

For example, the epidemic of 1907 in and around New York City, while it apparently extended north into New England, did not extend south to the near-by and intimately connected city of Philadelphia, nor west to the large cities in close communication with New York. The more recent epidemics of 1908, 1909, and 1910, in Minnesota, Nebraska, Iowa, and Kansas, are commonly, and perhaps justly, regarded as sequelæ of the epidemic of 1907 in New York, yet up to this time no epidemic has been recognized inChicago, through which passes practically all the traffic from New York to the above-mentioned States. Again, in 1910, there occurred a rather severe epidemic in Washington, D. C., and a proportionately smaller outbreak in Philadelphia, while Baltimore, lying between these two cities, and in daily close communication with both, escaped without an demic—with at most only an increase in the number of epiepidemic or sporadic cases. Numerous other instances might be cited where epidemics have failed to extend from a given focus to the communities which appeared to be most intimately exposed and to offer equal opportunities for the spread of the infection. Such instances alone give the impression that epidemics may be due to a ''place infection'' not transferred by human travel—an infection of local water or food supplies, of insects or of domestic animals, whose range of travel is generally more restricted than that of man.

(b) Rapid spread over wide areas.—There are, however, other and almost equally numerous facts which argue against a "place infection" as the cause of epidemics, the chief of these being the rapid spread of epidemics over wide areas, as, for example, the spread over a whole State within a period of a few months. Of such rapid spread over wide areas of country there are numerous instances, in some of which it has appeared upon close study that the spread was in a general way radial from the earliest focus. This is illustrated by the course of the epidemic of 1910 in Iowa, and rather striking instances of similar rapid radial spread are given by Wickman in his account of the epidemic of 1905 in Sweden, and by Kling in his description of the Swedish epidemic of 1911. Such rapid spread over a large territory practically disproves the hypothesis that epidemic outbreaks are due to place infection independent of and not transferred by ordinary human traffic, since it is quite improbable that place infection of numerous localities within the same general territory should develop independently at the same time. The rapidity of spread has, too, in many instances, been such as to confirm the supposition that man, the most rapidly and widely traveling animal, is the carrier of infection.

Both in its rapid spread over large areas and in its irregularity, skipping localities to which it might be expected to extend, poliomyelitis finds an analogy in cerebrospinal meningitis, a disease which we now have excellent reasons to believe is directly contagious, being spread from person to person chiefly through the agency of passive human carriers. These characteristics, therefore, do not necessarily indicate insect transmission nor argue against the direct transmissibility of poliomyelitis.

(c) Small total incidence in the population affected.—Even during so-called epidemics, poliomyelitis has characteristically a small incidence in the total population. To be sure, instances are not wanting of epidemics in which a large proportion, over 1 per cent, of the total population has been attacked; but these are rather exceptional instances and are practically confined to outbreaks in small towns and small rural areas. In a large aggregration of people, such as the population of a city with over 100,000 inhabitants, a county, or a State, epidemics seldom attack more than one in a thousand of the population, often not more han one in two to four thousand. The incidence of poliomyelitis, therefore, even in epidemics, is frequently less than the usual incidence of several of the more common endemic infectious diseases in the same communities, and strikingly less than the incidence which these common diseases frequently attain during epidemics. Notwithstanding this small incidence in the population, epidemics of poliomyelitis are self-limited, invariably declining in any limited area, as a single city or county, within a few months, and as a general if not invariable rule not recurring in that locality for a period of at least two years. This charactistic decline of epidemics after only a very small proportion of the population has been attacked appears not to be due to exhaustion of the sources or the vehicles of infection nor to be dependent altogether upon seasonal conditions. It is, in fact, difficult to account for on any hypothesis other than that of the exhaustion of susceptible material in the population.

(d) Incidence in rural and urban communities.—The recent occurrence of epidemics of poliomyelitis in so many countries, under such widely varying conditions, alike in tropical and frigid countries, in densely populated cities and in thinly settled remote country districts, has already been cited as showing conclusively that no set of conditions peculiar to any given locality is necessary for the development of an epidemic. It has, however, been observed as a very general rule that in small towns and in the country epidemics are more intense than in the large cities, attacking a larger proportion of the population. This has been found true not only when individual small towns are compared with large cities, but also for groups of all the smaller towns or all the rural population of a State, compared with all the large cities in the same area. The proportionately greater rural prevalence has in fact been so constant as to be unmistakably due not to mere chance but to some fundamental law. It is to be remembered, however, that this applies to epidemics; whether or not the same is true of the endemic or sporadic occurrence of the disease is not fully established. Although the records of the Massachusetts State Board of Health relative to the prevalence of poliomyelitis in the State for five years would seem to indicate that the prevalence has been constantly greater throughout that time in the rural towns than in large cities, yet even there a large proportion of the cases reported each year have occured in small epidemics scattered throughout the State rather than as sporadic cases.

In respect to its greater rural than urban prevalence, poliomyelitis has often been contrasted to such contagious diseases as measles and scarlet fever, which are quite constantly more prevalent in densely populated cities, and this contrast has been used as an argument against the contagiousness of poliomyelitis.

However, though the endemic prevalence of scarlet fever and measles is greater in large cities, data, which are as yet scant and incomplete, indicate that epidemics, even of these diseases, attain a higher incidence in the population of small towns and rural communities than in the population of large cities. Certainly it is true, at least of measles, that epidemics attain their greatest intensity in communities which have long been free from the infection; witness, for example, the devasting epidemics reported from the Faroe Islands and other remote communities. There is indeed ground for the view that the potential epidemic prevalence of a disease like measles is, in a measure, inversely proportional to its endemic prevalence. Therefore, in regard to poliomyelitis, the fact that epidemics reach a higher incidence in rural districts can not be taken by itself as indicating that rural conditions are necessarily more favorable for the spread of the infection. Before such a conclusion can justly be drawn it will be necessary to show that its endemic or sporadic occurrence is also constantly less in the large cities.

(e) Distribution among the various elements of the population in epidemic foci.—The close study of epidemics has shown that the incidence of poliomyelitis is proportionately about the same among persons living under good and those living under poor hygienic conditions. This practically eliminates from consideration as of great importance in the causation of the disease such factors as are intimately associated with poor hygienic conditions—such factors, for example, as insufficient and improper food, overcrowding, personal uncleanliness, and association with verminous insects.

No constant difference in regard to the incidence of poliomyelitis has been observed between the different races and nationalities constituting the population of areas where the disease has been epidemic. Nor has any constant relation been shown between the incidence of the infection and the topographic features of the various sections of the affected areas.

In one respect, however, poliomyelitis is constantly and very strikingly selective in its incidence, namely, in respect to age, its greatest incidence being always among children, especially those in the first half decade of life. Children under 5 years of age, constituting, in this country, from 9 to 12 per cent of the total population, furnish usually from 50 to 90 per cent of the cases of poliomyelitis. In some epidemics the disease is almost as prevalent proportionately in children between the ages of 5 and 15 as in those under 5 years of age, but adults (those past the second decade), constituting usually over 50 per cent of the total population, seldom furnish more than 10 per cent of the cases, usually a very much smaller proportion. In the Buffalo epidemic of 1912 the incidence of poliomyelitis in children under 5 years of age was fifty times greater in proportion to their number than in persons from 5 to 24 years of age, while the whole population over 24 years of age, more than 50 per cent of the total inhabitants of the city, remained entirely immune from attack.

As to the significance of this characterictic age incidence of poliomyelitis, its enormously greater incidence in children, it must indicate on the part of the children, either a generally greater exposure to the infective agent or else a greater susceptibility to its effects. So far as I am aware it has never been satisfactorily demonstrated that the children in any large epidemic focus were considerably more exposed to any probable source of infection than were the adults of the corresponding families. To be sure a number of suggestions have been made as to possible ways in which children might be generally more exposed to certain sources of infection than adults. For example, children drink milk more generally and more freely than do adults, but in every considerable epidemic of poliomyelitis of which I am aware, where the data collected have been sufficient, milk supplies could be quite definitely excluded as probable vehicles of infection. Moreover, milk-borne epidemics of the other infectious diseases, as typhoid fever and scarlet fever, while characterized by a high rate of incidence in children, are not so strikingly—almost exclusively—confined to children as the epidemics of poliomyelitis. Even the proof that poliomyelitis is characteristically a milk-borne infection would not, therefore, offer an altogether satisfactory explanation of its very excessive incidence in children undre 5 years of age and of the almost complete immunity of adults.

Again, on the hypothesis that poliomyelitis may be transmitted by biting insects, it has been suggested that children are more exposed to infection in this way because their scantier summer clothing and their inability to ward off such insects as readily as do adults. It seems altogether improbable that these considerations are sufficient to account for an incidence fifty times greater in children than in young adults; and, as a matter of fact, epidemic diseases known to be transmitted by biting insects (yellow fever, bubonic plague, typhus fever) are not, in nonimmune populations, characteristically children's diseases.

It has also been suggested that the infection may be commonly contracted from the dust of streets and dwellings, and that children, by reason of their habit of crawling and playing on the ground, are more greatly exposed to infection from this source than are adults. Especially as regards street dust appears very doubtful that children, as a class, are greatly more exposed than adults, since the latter travel more widely over dusty streets. It certainly seems quite improbable that the exposure of children to dust infection is so enormously greater than that of adults as to account for the peculiar age incidence of poliomyelitis, assuming dust as the chief vehicle of infection.

Finally, because of their less cleanly and individualistic personal habits, children are probably more exposed than are adults to direct contagion through infectious secretions, yet experience teaches that contagious diseases in a nonimmunized, generally succeptible population are not disproportionately prevalent in children. As examples may be cited smallpox in unvaccinated communities, measles in new territory, typhoid fever in communities where contact is the chief factor in its spread.

On the whole it may be said that epidemiologic studies up to this time have failed to demonstrate greater exposure of children than of adults to the infective agent of poliomyelitis, and that the hypotheses put forward to explain an assumed greater exposure are not cometent to explain it. The only hypothesis which appears to satisfactorily explain the enormously greater incidence among children is that they are, in general, more readily susceptible to the infection than are older persons,

Poliomyelitis quite commonly attacks both actually and proportionately more males than females. The disproportionate incidence in males, fairly constant in all age groups, is commonly most striking in the ages above 15 years. This is the reverse of what would be expected in a disease transmitted by direct contact with the sick. Females over the age of 15, being more commonly in contact with the sick in the capacity of nurses, would be expected to develop the infection more frequently than males of the corresponding ages, and such is actually the case with scarlet fever and diptheria. Since males of this age are more commonly out of doors and away from home than are females, the greater incidence of poliomyelitis among adult and adolescent males than females has very naturally suggested that the disease is usually contracted from some source other than the immediate environment of poliomyelitis patients, perhaps from some outdoor source, as from the soil, domestic animals, or outdoor insects. The greater incidence among males than among females is, however, not altogether incompatible with the view that the disease is really contagious, being transmitted usually through apparently healthy virus carriers. Males, whose business relations generally bring them into contact with more people, would theoretically have more chances of infection from carriers than females, and assuming equal susceptibility, would more frequently develop the disease.

(f) Local sources and routes of infection.—Notwithstanding the minute care with which a considerable number of outbreaks of poliomyelitis have been studied, it has almost invariably been impossible to trace, with any degree of accuracy, the exact origin and routes of dissemination of the infection. Among the exceptions to this statement may be noted some of the small outbreaks described by Wickman, where it was possible to trace fairly definite lines of direct and indirect contact between cases; also a small outbreak, likewise reported by Wickman, where the evidence suggested that the infection had spread through a common milk supply. These, however, are exceptional instances. In general the epidemiologic study of outbreaks has yeilded only negative results. The very fact, however, that the results of study are usually negative has a certain significance.

For example, mass infection of common water and food supplies has been quite generally and definitely eliminated as a probable means of dissemination in the epidemics studied.

It has already been noted that it is usually impossible to trace any definite connection between the incidence of the disease and the immediate environmental conditions under which the various elements of the population live. This is rather strong evidence that the spread of infection is largely independent of such factors as overcrowding, improper feeding,-personal uncleanliness, and the presence of vermin.

In a general way, the incidence of poliomyelitis in different communities has appeared to be roughly proportional to the number of domestic animals present. This is, however, perhaps only another method of stating that the disease has been commonly most prevalent in rural and semirural communities, where domestic animals are usually more numerous in proportion to the population than in large cities. There is no conclusive evidence of a characteristically greater incidence of infection among those persons who, by reason of their occupation or their residence, are most closely and intimately associated with domestic animals.

Domestic animals suffering from paralytic affections, clinically similar to poliomyelitis, have often been found in communities where poliomyelitis was epidemic, but these animals have not appeared sufficient, either in numbers or in the intimacy of their association with the cases of poliomyelitis, to account for the epidemics. Also, it has not been shown that the paralyses of animals are essentially similar to human poliomyelitis. Paralytic diseases of lower animals are not very uncommon, and although they have not been fully studied it appears that they may be due to a variety of causes. It is not even proven that such diseases are actually more common during epidemics of poliomyelitis. It is quite possible that their apparent association with epidemics of poliomyelitis is due to the fact that they are more apt to be noted and reported in communities where the epidemic prevalence of poliomyelitis has attracted attention to them.

Peculiar topographical or meteorological conditions can not be held to account for epidemics, since, as already noted, the range of such conditions under which epidemics have occurred is very wide. The unprecedented prevalence of poliomyelitis in certain sections of the United States in 1909 and 1910, during unusually dry seasons, gave considerable color to the hypothesis that deficient rainfall, with the consequent excessive prevalence of dust, was an important factor in the causation of epidemics, but broader experience has not confirmed this supposition. The fact that an epidemic of poliomyelitis may be declining in one community while in another, so near by as to be under approximately identical meteorological conditions, an epidemic may be just developing, is a further indication that the development and decline of epidemics are to a considerable extent independent of the weather conditions

The evidence in regard to the contagiousness of poliomyelitis may be considered from two points of view; First, from the incidence of the disease among persons known to have been intimately associated with poliomyelitis patients, and second, from the proportion of recognized cases in which evidence could be obtained of association with previous cases.

The statistics presented in this report show that of 2,070 persons exposed to poliomyelitis by residence in the same houses and same families as poliomyelitis patients, only 14 (0.6 per cent) developed the disease in frank paralytic form. Even assuming that all of these actually contracted their infections from association with the sick members of their families. the contagiousness of poliomyelitis must still be very slight—less than one-fifteenth that of scarlet fever, as shown by Chapin's extensive statistics, compiled on a similar basis.

The inclusion of abortive cases, which, though not developing paralysis, may be conservatively diagnosed as poliomyelitis, approximately doubles the apparent contagiousness, which is still farther increased (to 3.2 per cent) by the inclusion of less definite suspected cases. Yet even including these indefinite, suspicious cases, it is only in exceptional outbreaks that the attack rate of poliomyelitis among exposed persons approximates that of scarlett fever or diptheria. Similar evidence of the slight contagiousness of poliomyelitis has been afforded by its very small incidence among large groups of children exposed to contagion by association, in schools and institutions, with acute cases. The exceptions to this, as the outbreak reported in Hancock County, Iowa, and some small outbreaks reported by Wickman, do not invalidate the general truth of the statement, which is supported by a large mass of more or less definite observations reported by numerous observers from all parts of this country and Europe.

Taking up the evidence of contagiousness from the other point of view, namely, by attempting to trace cases back to association with previous cases, the statistics presented in this report agree with the observations made in most epidemics, that only a small proportion of cases can be ascribed to known contact with previous definite cases of poliomyelitis. Even including association with merely suspicious cases of illness, the majority of cases of poliomyelitis can not be traced to known contact, either direct or indirect, with any previous case. It is this apparent lack of relation between cases which has led so many investigators to seriously doubt or even deny the transmissibility of the disease.

On the whole it may be fairly definitely concluded that if poliomyelitis is transmissible from person to person through either the respiratory or the gastrointestinal excretions, it must be rather slightly or rarely transmissible, since the disease develops in such a small proportion of persons known to be intimately associated with acute cases. It also seems well established that the recognized cases of the disease must be relatively unimportant sources of infection. This follows necessarily, because a large proportion of the cases studied have been in persons not associated in any known way with previous recognized cases—often under circumstances which precluded the possibility of even indirect contact unless through the intervention of not one but a series of unrecognized carriers. In short, if poliomyelitis is a contagious disease confined to human beings, as certainly seems most probable at this time, the chief sources of infection must be cases of illness not recognized as poliomyelitis, or, more probably, apparently healthy carriers of the virus.

(g) Evidence of transmission by insects.—Aside from the evidence that poliomyelitis may be transmitted experimentally from infected monkeys by biting insects (bedbugs and stable flies), and that the virus may be mechanically carried upon and in the bodies of common house flies, the evidence in favor of the view that the disease may be in nature insect-borne is based upon certain broad epidemiological peculiarities and the results of intensive study of local outbreaks.

The broad epidemiological peculiarities which at once suggest that some insect is a necessary agent in the transmission of poliomyelitis are a seasonal prevalence corresponding to the season of maximum prevalence and activity of numerous insects; greater intensity of epidemics in rural than in urban communities; and the irregular spread of epidemics, suggesting that some local factor as yet unrecognized must be present in order that an epidemic may develop.

The insects which can merit consideration as necessary or even important factors in the transmission of poliomyelitis may be expected to exhibit the following characteristics:

Distribution over an approximately world-wide territory.

Maximum prevalence and activity during the late summer and fall months, but in the North Temperate latitudes a certain though diminished prevalence and activity throughout the year.[1]

Prevalence in large cities, small towns, and rural districts.

Comaritively uniform distribution among the various social strata, among persons living under good and those living under poor hygienic conditions.

As to the seasonal prevalence of poliomyelitis, it is not so definitely limited to the warmer months as would be expected if the disease is transmitted by some outdoor insect, such as mosquitoes or biting flies. It has certainly not the sharply defined seasonal prevalence of yellow fever. On the other hand, it has a more sharply defined summer and autumn prevalence than would be expected in a disease transmitted by insects more parasitic to man, as bedbugs, lice, and fleas. Typhus fever transmitted by the louse is rather a winter than a summer disease, and bubonic plague transmitted by fleas is by no means limited in its prevalence to the warm seasons.

As noted elsewhere in this report and in previous publications, the seasonal prevalence of poliomyelitis corresponds in a general way to that of typhoid fever, especially to that of rural typhoid and the "residual" typhoid of cities with good water supplies; and even more closely to the seasonal prevalence of infantile diarrhœa and enteritis. Therefore, while the seasonal prevalence of poliomyelitis is markedly dissimilar to that of most so-called contagious diseases believed to be respiratory infections, it is at least as nearly like that of digestive tract infections as of any known insect-borne disease.

The greater rural than urban intensity of epidemics of poliomyelitis has already been discussed, and mention made of the fact that the data now available do not prove the existence of more favorable conditions for the spread of infection in rural communities; they may even be interpreted as indicating a lesser rate of endemic prevalence in the latter than in large cities.

The fact that the most careful study of discrete outbreaks has often failed to discover any avenues of contact between cases has suggested to a number of students of the subject that the infection was disseminated through insects capable of traveling or being carried for considerable distances. The assumption that insect transmission offers any explanation of the scattering rather than grouping of cases is of doubtful validity, contradicted rather than supported by actual observation of epidemic diseases known to be transmitted by insects. Certainly the grouping of cases in close proximity to each other or their association with some definite focus is quite characteristic of epidemics of yellow fever, typhus, bubonic plague, and fly-borne epidemics of typhoid fever. The traveling habits of the stable fly might appear to account for the occurrence of cases of poliomyelitis in persons at a considerable distance from the original source of infection, but even so it would be expected that if this were the usual method of transmission cases would be more grouped in localities where these flies are strikingly abundant, as in the vicinity of large stables, and that infection would be noticeably common in persons whose occupation greatly exposes them to the bites of stomoxys, as teamsters and hostlers.

Again, two facts which fail utterly of explanation by the theory of insect transmission per se are the small total incidence of poliomyelitis and more especially its preponderating incidence in children. Diseases known to be insect borne are not characteristically more prevalent in children than in adults, nor is there any obvious reason why they should be unless children are more susceptible to the infection. The hypothesis of insect transmission, therefore, like that of transmission by direct contagion, leads back to the assumption of general immunity to the infection on the part of adults and to unrecognized sources of infection.

On the whole, while there is much to suggest that poliomyelitis is insect borne, its epidemiology appears to be equally well explained on the theory of direct transmissibility through infectious secretions, and the latter theory is at present supported by more experimental evidence than is the theory of insect transmission.

THE TREATMENT OF RICKETS, BASED ON A NEW THEORY AS TO THE PATHOGENESIS, WITH AN ILLUSTRATIVE CASE*

BY ERIC PRITCHARD, M.D.
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The case of rickets which I show this afternoon is brought before the Section for the purpose of illustrating the good results which can follow when the treatment is based in accordance with certain principles which I venture briefly to outline.

In accordance with the view of the pathogenesis of rickets

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I suggest, the symptoms usually ascribed to the condition may be regarded as representing the results of the calling into play, by the victims of the disease, of certain protective mechanisms. The troubles from which they protect the organism, in the case of rickets, are those which arise in connection with the disposal of an excess of nutritive material.

In order that an individual may remain in health, sufficient food-material must be provided for the maintenance of the normal temperature, for the performance of such mechanical work as may be required for the ordinary purposes of life, as well as for growth and maintenance of the tissues, and also for the elaboration of secretions. If the total calorie value of the food exceeds these requirements, it follows that the excess must be disposed of in some manner which, inasmuch as it does not subserve any required or necessary purpose, may be regarded as pathological. Recognizing the strictly conservative character of the organic reactions in the animal body, we may assume that under any given circumstances the method of disposal adopted will be that will inflict the least possible degree of injury on the organism as a whole.

By what methods can excess of food be disposed of? There are many alternative methods, of which the following are examples: Classified in order of physiological advantage we may assume that the most economical expedient is to store up the excess in the form of a food reserve—for instance, as glycogen or fat. The limits of storage—especially as far as the fixation of nitrogen is concerned—are, however, under all conditions extremely circumscribed, and occasionly quite negligible.

A second method is that of combustion or oxidation to the normal end-products, carbonic acid gas, urea, and water. This method is economical in that it entails little strain on the mechanisms of elimination; on the other hand, it implies a waste of energy in certain other directions, as, for instance, in the dissipation of the heat produced and in the supply of the necessary oxygen.

A third alternative depends on the short-circuiting of the oxidation processes, in fact, on the production of incompletely burnt-up products of combustion. This method has the advantage of saving oxygen and of limiting heat production, but the disadvantage of flooding the blood with acid bodies of large molecular size. I mean such bodies as lactic, oxalic, uric, glycuronic, di-acetic, B-oxybutric, and certain other organic acids.

Such acid bodies are not allowed to remain in the blood without neutralization, for acid reactions are fatal to cell activities; hence they are neutralized almost before they are formed at the expense of alkalies or basic elements derived from the floating reserves or from the tissues themselves. After neutralization such bodies are, of course, removed from the system by the ordinary processes of elimination. In this way the reserves of carbonates in blood are drawn upon, ammonia is extracted from protein sources, while calcium, sodium, magnesium, and iron are withdrawn or withheld from various important organic combinations.

The injuries inflicted on the organism by this method of disposal are those which are commonly covered by the comprehensive term "acidosis." The symptoms by which we recognize an acidosis are as follows: In serious cases we observe "acyanotic hyperpnœ" due to the depletion of carbonic acid carriers and concomitant stimulation of the respiratory centres; there may be serious cyclic vomiting, possibly due to an associated stimulation of the pneumogastric centres, as well as a great variety of nervous symptoms dependent on analogous causes. Among the more chronic results are disintegration of the red blood corpuscles, interference with the oxygen-combining powers of hæmoglobin, and the demineralization of the osseous tissues. One of the most interesting results of the hæmolytic disturbances thus set up is the compensatory activity of the blood-forming organs; the hæmogenetic functions of the red marrow being stimulated in a corresponding degree, the external evidences of this functional and compensatory activity are the enlarged epiphyses of long bones so common in rickety conditions.

The resources at the disposal of the organism for dealing with excess of nutritive material are by no means exhausted by the methods already enumerated, but they represent the most important and include among their results the symptoms which are generally regarded as making up the clinical picture of rickets. In any particular case of rickets it is impossible to predict what precise method or combination of methods will be adopted to dispose of the excess, and herein lies the protean character of the symptoms of the disease. But however much they may be disguised or obscured, or however incompletely we may be able to follow the intermediate stages, we may feel perfectly confident that in the final issue the metabolic processes will follow the rule of physiological expediency, obey the laws of the conservation of energy, and conform to the economic necessities of supply and demand. The fulfilment of these laws and conditions must result in the manifestation of the kind of symptoms I have described, which make up the clinical picture of rickets.

If this theory of rickets is true, as I firmly believe, it is necessary to prove that in every case of rickets there is some excess of food, otherwise the acidosis and the other manifestations of the disease cannot be explained on the lines suggested. If by "excess" we simply mean "excess" in the popular interpretation of the term, and as estimated by the usual arbitary standards, it must be admitted that the theory falls to the ground. But if by the term we mean "relative excess"—that is to say, a redundancy over and above that which is required for the physiological purposes—then I submit that the theory holds good in every detail. I mention this because most people appear to think that rickets is due to some deficiency in the food and not to excess.

The physiological food demands of many infants and children are neglible. If they are kept in hot, stuffy rooms, if they are wrapped up in multiplicity of clothes, if they are seldom taken out of doors, and if they are given no opportunities for muscular exercise, they will create no demand for food, and consequently any dietary, however small, may be relatively excessive, and if excessive must be disposed of by one of the protective methods already described. These are usual conditions which surround the victims of rickets. Under such conditions we could predict with complete confidence that the child would if he could lay up stores of glycogen and fat and become obese; that he would show evidence of excessive combustion by sweating and vascular dilatation of the superficial capillaries of the face and other exposed parts and possibly by disturbances of the heat-regulating centres, and then of suboxidation with the symptoms of an acidosis, with enlarged epiphyses and demineralization of bone; and finally of acyanotic hyperpnœa with other serious nervous manifestations.

I have for many years treated all cases of rickets on the assumption that this is the true pathogenesis of the disease, but I have selected this particular case to show because it has responded peculiarly well to the expedients which such an assumption suggests.

The following is a short history of the case:—

W H. a girl, aged 2 years, was admitted to the Queen's Hospital for Children on February 28, 1916, for spinal disease, supposed to be tuberculous.

Family history: Mother married twenty-four years; fifteen pregnancies, four miscarriages; ten children alive and healthy W. H. was born ten months after the previous child, who is strong and healthy. Mother contracted gonorrhœa from father two months before birth of W. H. No family history of tuberculosis.

Previous history: Very small at birth, weight not recorded. Ophthalmia neonatorum. Child always delicate. Easily caught cold; has had cough on and off since birth; severe attach of bronchitis two months before admission.

Feeding: Breast-fed four or five months, then Nestle's milk and barley water; then goat's milk, and finaly Glaxo. Solid food given at the age of nine to ten months. Recently, before admission, had cow's milk, gravy, potatoes, cream, eggs, bread and milk—altogether a very liberal dietary.

Patient has never had diarrhœa nor vomiting: bowels have been fairly regular; motions normal. At about the age of 6 months mother noticed the back was becoming greatly curved, the curvature increasing. The child was not nursed much, but was allowed to lie at full length on her back in a perambulator which was long enough for the purpose. At the age of 1 year the child began to say a few words, and to make attempts at taking steps if held, but has never stood alone. The legs have always appeared "strange."

Condition on admission: Child markedly anemic and flabby, lies absolutely motionless with legs fully extended; makes no effort to move, and cannot be made to turn over or use legs by any ordinary method of stimulation. Patient has been kept on her back for some months owing to spinal curvature. The bones show rickety changes, in marked degree. Fontanelles not closed, bossing of frontals, marked Harrison's groove, marked curvature of humerus and femur; some bulging of the temporal bones just above the ear. Marked kyphosis in lower dorsal and lumbar region with considerable prominence of spinous processes. All epiphyses of long bones greatly enlarged and well-defined rickety rosary. There was no tenderness of spine, no rigidity, and apparently no pain in jarring.

Heart small and flabby in action. Abdomen pot-bellied. Lungs: No obvious physical signs.

Pathological report: Urine acid; small deposit on centrifugalizing, consisting of starch, granular and bladder epithelium, numerous Gram-negative motile bacilli; no pus. Blood: red blood corpuscles, 3,640,000 per cubic millimetre; hæmoglobin, 40 per cent.; colour index, 0.55 per cent. Differential count—lymphocytes, 62 per cent.; polymorphs, 37 per cent.; eosinophiles, 1 per cent. No alteration in size or shape of red blood corpuscles. No nucleated forms. Wassermann test negative.

X-ray report: Spine: All the bones appear poorly mineralized. No indication of tuberculous deposits in spinal vertebræ; all epiphyseal lines irregular.

Progress of case in hospital: The general condition of the child shows enormous improvement since admission. The temperature, however, has never been steady, but has fluctuated daily between 101° F. and 98° F. The pulse fluctuates—rate between 116 and 130. The weight on admission was 1 st. 3 lb. 14 oz., and is now (May 20) 1 st. 1 lb. 12 oz. Movements are much more active, and the child can now (three months after admission) sit up by himself and stand up by holding on to the head of the bed. The colour of the child has completely altered, and she no longer appears anæmic. Since admission there has been one attack of rather severe bronchitis, lasting a few days with high temperature, due to an infection (influenza) which attacked most children in the same ward. The general course of the complaint suggests that in addition to the very marked symptoms of rickets there is an underlying tuberculous process. But the fact that this serious complication has not interfered with the general improvement of the typical rickety symptoms only strengthens the view of the pathogenesis of rickets which I have sketched.

The treatment since admission has been based on the assumption that the marked and typical rachitic symptoms have been caused by a relative excess of food, which has called into play certain protective mechanisms, which have brought about a short-circuiting of the oxidation processes and the production of an acidosis. The acidosis has led to an anæmia and the organism has attempted to counteract this by compensatory over-activity of the hæmogenetic centres in the long bones. Hence the great enlargement of the epiphyses of the long bones.

The acid toxæmia has further led the paresis of muscles, the general debility and the demineralization of the bones. The kyphosis is probably postural. Previous to admission the child had been treated by liberality of diet and enforces rest in the recumbent position on the assumption that the spinal curvature was of a tuberculous character, and hence all the conditions were provided for establishing a "vicious circle" of relative overfeeding. Since admission the treatment has been to create a demand for food by massage, resistance exercises, cold douches, and, as far as conditions in hospital allow, by open-air treatment. The acidosis has been specifically treated by the exhibition of large doses of alkalies, but the alkali tolerance has been very high, and the urine has rarely been alkaline in spite of the alkali administration. The presence of the Gram negative motile bacilli in the urine may be explained by its acid reaction. To compensate for the anemia carbonate of iron has been given, and phosphorated cod-liver oil (1 in 10,000) has been supplied with the view of building up the damaged nervous system. The diet has been simply of milk, restricted in quantity.

The general result has been that, although the child has lost weight owing to the muscular exercise and loss of fat, the general condition has improved immensely.

I cannot help thinking that the general improvement of the rickety symptoms under this line of treatment, in spite of some underlying condition of an infective and probably tuberculous character, proves that the hypothesis is correct and that the pathogenesis of the rickety condition in this case at least, and probably in all cases, is due to causes which may be explained in accordance with the views I have ventured to express.

DISCUSSION.

Dr. Walter Carr: Dr. Pritchard says that the child suffered from a spinal curvature which was erroneously diagnosed as spinal caries, that she was consequently kept for some time absolutely at rest, that during that time she was relatively over-fed and as a result developed severe rickets. Surely, however, the spinal curvature is to be regarded as a definite symptom of well developed rickets; and if so, the disease must have been present for some time before the rest treatment, which Dr Pritchard regards as having caused it, was even commenced. Furthermore, I note that the patient was the fifteenth child, and her immediate predecessor was only ten months older. I wonder if Dr. Pritchard regards these facts as of any importance, and especially whether, under such circumstances, it is likely that she was ever even relatively overfed?

Professor Adami: Let me confess that thus far I have learnt to distrust absolutely any theory of rickets that has come before me, and to regard the disease as one of the hopelessnesses of pathology, and let me admit that in the paper which we have just heard, at least there is a reasoned course of thought on the part of Dr. Pritchard. Everyone knows how difficult it is to discuss on first hearing any new line of thought and inquiry. I cannot go so far as to accept immediately and unreservedly what Dr. Pritchard has told us, but would say that he has brought forward some points of extraordinary interest. His suggestion, for example, that the swelling in the region of the epiphyses is compensatory, due to the need for increased production, not of bony elements proper, but of the blood-forming constituents of the marrow, well deserves consideration, while I am prepared to go very far with him in finding a connexion between acidosis and rickets and to see in acidocis an explanation of using up of calcium and other minerals of the body to supply bases which act as an antidote thereto. That finally, acting along the lines of this theory of causation, as due to relative excess of nutrition (and I would place emphasis on the word "relative"), Dr. Pritchard is able to bring before the Section a case showing notable improvement, entitles his contentions to respect; the theory must not be put aside without consideration.

Dr. Eric Pritchard (in reply): I did not expect I should be able to convert the greater number of members of this Section to a revolutionary view on first hearing. The inference I hoped would be drawn was that the term "rickets" is a very unsatisfactory one, and the very protean nature of the symptoms suggests the unsuitableness of the term. There is every variety of symptom produced by one or other of the many protective mechanisms which are called into play. One cannot say, in any given case, what will be the line of least physiological resistance, the most expedient line for the organism to follow. One feels that the organism is so magnificently conservative that in each case of relative over-feeding it will take its own best line: it may be one of acidosis, of storage, or of oxidation of food.

SOCIETY TRANSACTIONS

THE NEW YORK ACADEMY OF MEDICINE

Special Meeting to Discus the Subject of Infantile Paralysis, July 13, 1916.

(New York Med. Jour.,July 22, 1916)

The President, Dr. Walter B. James in the Chair.

President s Address.—Dr. Walter B. James, president of the New York Academy of Medicine, introduced the speakers in turn with appropriate explanation of their particular authority to speak on the subject they chose. At the close of the meeting he invited all present who were interested in asking questions of those recognized as authorities on the subject of the evening, to convene at the Academy, where this could be done while taking light refreshments. He congratulated Doctor Emerson on the work of the department of health, and the efficacious manner in which the epidemic had been handled, and expressed the gratification of all that in spite of the great heat of the last few days, the daily number of cases reported had diminished, indicating that the epidemic was probably now under control.

The Clinical Types of the Disease.—Dr. Henry Koplik said that poliomyelitis was primarily an epidemic disease, and as a sporadic condition had attracted very little notice. All the epidemics which had thus far been recorded resembled each other very closely. An attempt to connect this disease with the occurence of cases of cerebrospinal meningitis had developed into a belief that poliomyelitis was an entity, clinically occurring in epidemics in the late spring to late autumn, and following the regular sporadic occurrence of the disease in limited numbers in the months following the winter and reaching into late spring up to the time of the epidemic outbreaks. Epidemics of this disease had been known to skip a year and always to crop up in the place of its original occurrence, which should give the thoughtful a hint as to its cause and epidemiology. In all the epidemics thus far recorded, the symptomatology and clinical types had been much the same.

Though most of the scientific knowledge of the clinical types of poliomyelitis was borrowed from Swedish and Norwegian observers, Medin and Wickman, the first inkling of the epidemic nature of the disease was voiced by Colmer, an American physician, who in 1841 observed some form of paralysis in a child and obtained the history that in the locality in which the patient lived several similiar cases had occurred, most of them ending in recovery. Following him, Caverly, in 1894, described an epidemic in Vermont; Taylor and Chapin later on observed the epidemic nature of the disease. Aside from these observers, much of the clinical knowledge at present was due to Medin, who described the clinical types of acute epidemic poliomyelitis in 1884 before the International Congress, much to the astonishment of most pediatrists, who still retained the simple picture as given in older textbooks, of poliomyelitis anterior as a simple, infantile paralysis. In all, forty-two epidemics had been observed in America and on the Continent, and this alone would establish the tendency of poliomelitis to occur in epidemic form at certain seasons and remain sporadic until the time arrived for a new outbreak.

The disease selected the young as its victims. Out of 886 cases in the epidemic of 1907, 571 were in children below three years of age, 771 below five years, and three were under six months of age. In the present epidemic, the youngest patient the author had seen was a baby four and a half months old and absolutely breast fed. The most susceptible period was from one to three years of age. There were four principal types which could be clinically fully described and proven by laboratory methods: the abortive, the bulbospinal, the cerebral and meningeal, and the bulbopontine types. Wickman also described a neuritic type. These types could all be understood when poliomyelitis was regarded from the standpoint of an acute, infectious disease, involving certain parts of the general nervous structures, causing certain definitely marked pictures and stopping there, or going on to involve at one stroke the whole cerebrospinal axis and in this way causing a debacle of the whole substratum of the nervous economy.

It was through the abortive type of the disease that these cases were spread to others. This type did not go on to paralysis, recovered, and did not leave the host injured as to the muscular motor apparatus. This type could be recognized so as to leave no doubt as to its distinct identity. A child of five years of age was attacked with a headache, slight malaise, and vomiting lasting five days, intense pain in both lower extremities radiating to the soles of the feet and worse at night, slight pain in the nape of the neck; lassitude, cerebellar gait on walking, increased reflexes in the lower extremities, rectal temperature rarely above 100.5 degrees F. In ten days the pains disappeared, the child was well, and wanted to go out and play. The abortive cases presented prodromata, such as headache, weakness, diminished reflexes, and pain in the nape of the neck, with or without vomiting and fever, and still did not present paralysis, and recovered.

The spinal, or bulbospinal type was the most common and gave the disease its name. The patient had an attack of vomiting and slight fever and within twenty-four hours the mother observed the child could not move one or the other extremity. These forms might have no fever, but it was posible in giving the history the mother might have overlooked the symptoms of fever, malaise, and such indispsition as peevishness, which might have preceded by a few days the paralysis. In other cases, the paralysis appeared gradually. Pain might continue to be severe, especially when the extremities were moved. The paralysis might spread and involve not only the remaining lower extremity, but the upper extremities, the muscles of the back and respiratory muscles of the thorax, and possibly the muscles of the abdomen. As a rule, in the purely spinal cases, the paralysis appeared and did not spread. In others, it might spread from the extremities and involve the whole trunk, even causing bulbar paralysis of the respiratory centres. But after the tenth day, paralysis was not apt to spread to the bulbar medulla, though cases had been known to be fatal after the fifteenth day.

Both the meningitic and cerebral types should be combined because of the cerebral symptoms which gave rise to a picture closely simulating meningits. The meningitic form of poliomyelitis ran its course with cerebral symptoms. A child of three years was taken with vomiting for forty-eight hours, followed by rigidity of the neck with pain on flexion of the head, Brudzinski sign and reflex, Kernig, Sopor, and Macewen's sign which might be slightly marked; also diminished knee reflexes. Some patients might improve after a day or two, the fever might abate, and they might even be about and then have a recrudescence of the fever ,sopor, rigidity, delirum, irritability, extreme hyperesthesia and pain in the nape of the neck. In some cases the only palsy might be ocular; in others a slight facial palsy might be present combined with weakness in one or other extremeties. After a week, the patient became brighter. There was still, however, marked ataxia and Romberg's symptom. As convalescence was established, the ataxia was the last symptom to disappear. The hydrocephalus and abnormal mental state might remain for some time after the temperature was normal. On recovery, there was a slight strabismus, ataxia, optic neuritis. In one group of cases the writer had seen unilateral ophthalmoplegia with hemorrhages into the retina .In lumbar puncture lay the differentiation in the form of poliomyelitis from cerebrospinal meningitis.

The bulbar or pontine type of the disease deserved notice as a distinct form. An infant, breast fed, thirteen months of age, was attacked with fever and vomiting. The fever continued into the afternoon of the following day, when the mother noticed a flatness of the right side of the face. The temperature continued at 102.4° F., the infant was bright, laughed and played in the crib, but there was a tired look about the face and eyes. The knee reflexes were increased, otherwise there was no paralysis that could be demonstrated. In another case, ten days before the patient, aged twenty-one months, was seen, he was taken with high fever and vomiting, and there were some green movements. The fever continued, in a less degree, to the ninth day, when the mother noticed that the right side of the face was flat, there were tremulous movements of the head and arms, and the patient was restless. There was constant jactitation of the head and insomnia; rigidity of the neck, but no palsies of the extremities; on the contrary, the patient exhibited great strength in both the upper and lower. In other cases, the outcome was not so favorable; there was an involvement of the nuclei which controlled deglution and respiration. In these cases the patient might be lost by paralysis of the respiratory centres. The neuritic type included cases in which pains in the extremities became a leading feature of the clinical picture. In some of these cases paralysis developed; in others it did not. They were referred to in this paper under the head of abortive cases.

The symptoms given justified a lumbar pucture in order to establish the character of the fluid which in poliomyelitis showed a lymphocytic cytology, and an increase of globulin. The examination of the blood was very uncertain.

As to prognosis, the low mortality of the ten per cent. applied to children below eleven years of age and twenty-seven per cent. among older children and adults. Twenty per cent. of all cases ended in complete recovery, and the younger the child, the better the prognosis.

Abortive and Nonparalytic Cases—Their Importance and Their Recognition.—Dr. George Draper, of the Presbyterian Hospital, said that if the cases of poliomyelitis progressing to paralysis were typical of the disease, the term, abortive, was incorrect and should be replaced by atypical; but as a matter of fact, the cases which fortunately escaped paralysis were just as truly cases of the disease as those which did not and were in reality more dangerous to the community.

At this time, there was no way of knowing accurately the proportion of those having the disease who were nonparalytic and those who were paralytic. In one of Wickman's groups, at autopsy, out of four cases, three were not paralyzed. In another group of four, two were not paralyzed. In Muller's group of three cases, one was paralyzed, in one the reflexes were lost, and the third was negative. In general, all abortive cases fell into groups; those with gastrointestinal symptoms, those with respiratory symptoms, those with febrile symptoms, and those with symptoms of meningismus. There were also cases with possibly transient paresis. The paralysis cases might have the prodromata of any of the first four groups mentioned. The intensity of the symptoms was no guide to prognosis.

The cases of poliomyelitis with gastrointestinal disturbances might easily, from the symptoms, be diagnosed as other than true condition. The respiratory cases complained of influenzalike aches and pains. In the febrile cases, careful watch would disclose transient weakness, local muscle tenderness and the spinal flexion sign. On the slightest suspicion, spinal puncture should be done at once. This should be done also in the cases of meningismus, when a positive differential diagnosis from tuberculosis or epidemic meningitis could be made.

No doubt many abortive cases existed. It was absolutely necessary that they be recognized, for a double advantage would result: as moving sources of contagion they would be controlled, and patients who were otherwise destined to be paralyzed would be recognized to be in danger in the preparalytic stage and, when a specific remedy was finally discovered, probably cured without subsequent crippling.

Dr. Louis C. Ager, visiting physician to the Kingston Avenue Hospital, Brooklyn, said the city might well be proud of the way it handled this epidemic and of the adequate hospitalization of such a large number of cases. Many valuable data on the subject of poliomyelitis were now being carefully gathered, and later, when the heavy clinical work had lessened, would probably prove of infinate value, as the only other large epidemic of this disease, in 1907, had not been recognized until it was over. In regard to the hospitalization of the cases, too much could not be said in praise of the way the emergency had been met. This would be better appreciated when it was recalled that from June 20th until July 12th the Kingston Avenue Hospital alone cared for 320 cases. The resident staff were thus brought suddenly face to face with a large number of serious problems, and an immense amount of work to be accomplished. A specific incident would illustrate this more fully. On July 3d there were eighty-nine cases admitted to the hospital. During that day the ambulance surgeons had only three hours sleep and no meals.

That hospital care was advantageous was apparent in the change observed in many of these little children as a result of the facilities offered for making them comfortable. Put in cool, clean comfortable beds, with fresh air blowing in from windows on each side of the ward, it was wonderful to see the almost immediate effect. There had been some difference of opinion as to the infectivity of the disease, and this had not yet been decided. Doctor Draper had spoken of the large number of abortive cases, and in this class there was more proof of the infectivity of poliomyelitis than there was before the epidemic of 1907. The speaker reported the two following examples: On July 2nd, a child was taken sick with convulsions, vomiting, and fever and recovered; on July 3d, another child in the same family was stricken with the acute fulminating type of the disease and died within forty-eight hours; on July 4th, an older member of the family manifested the disease. A second group of cases was as follows: On June 28th, a child became ill with an abortive type; on June 30th, a second child came down with the fulminating type and death followed; on July 5th, a third case occurred in this same family which in this instance was follow-by paralysis. There must be a large number of abortive cases that were not recognized. In the Kingston Avenue Hospital there were at least eight series of cases where there had been two or more victims in the same family. A great many more instances of this kind would have been found if there had been more complete statistics in 1907. About the only statistics on this point were those published by Wickman and Medin in Europe.

It has been remarked by some observers that blond rather than brunette children had been the chief victims of poliomyelitis; on this point the speaker did not care to give an opinion, but he could state positively that there must be few cases among negroes as among the 350 cases in the Kingston Avenue Hospital there had been no colored children. Some investigators had tried to find a relationship in the incidence of the disease to light complexioned people, but such relationship had not been traced. The incidence of the disease was likewise practically the same in all nationalities.

In reference to the affection of the liver and spleen in this disease, it could be stated that in this respect, so far as the clinical signs were concerned, there was no enlargement of these organs, except in some fulmating cases. This was a systemic affection and, like tuberculosis in small infants, involved the entire system. Only two instances of an enlarged liver were found in sixty-seven cases.

The age incidence in the present epidemic was practically the same as in the epidemic of 1907. It was peculiar that in epidemics in this country the age incidence was lower than in those on the other side. Of eighty-seven cases, forty-six occurred between the ages of two and five years; twenty-two between the ages of one and two years; eight between the ages of six and twelve, and three between one and six months. There were two adult cases in this group; one in a woman twenty-eight years of age and one in a pregnant woman of twenty-one years.

As to the types of the disease, in the clinical work three had been distinguished: the encephalic, the myelitic, and the meningitic. Perhaps this classfication was not scientific, but it had been found valuable for bedside work. It was found, as usual, that the lower extremities were most frequently paralyzed; in a group of sixty-four cases examined, the lower extremities were involved in thirty-nine, in seven instances the upper extremities, in five there was facial paralysis, and in thirteen cases the only definite symptom was paralysis of the muscles of the back. There were two typical ataxic cases.

The fulminating fatal cases gave the most pronounced symptoms. There was one peculiar and unusual case of a boy of eleven years, who was well nourished and well developed. He was brought in when his only symptom was labored breathing. There was a slight blur in his speech and he could not swallow milk on account of pharyngeal paralysis. His diaphragm was completely paralyzed, and the labored breathing was accomplished by the thoracic muscles alone. He could stand in bed and use his arms and hands, and his back showed no evidence of paralysis. He gradually became weaker and died five hours after entering the hospital. Another case of the fulminating type showed a general paralysis; practically all the skeletal muscles were affected, and there was marked respiratory paralysis. In both of these cases the heart was not affected and continued to beat for some time after respiration had ceased. Immediately after death artificial respiration and oxygenation were tried and kept up for some time. In some instances, artificial respiration had succeeded in bringing back the color after death had apparently set in, and it was still hoped that in some cases something might be accomplished by this method. The apparatus which Doctor Meltzer used at the Rockefeller Institute was employed.

In regard to the meningitic type, there was in the hospital a boy who was wildly delirious, had complete paralysis of one leg and one arm, and was totally blind. There was an alteration in his condition from deep meningeal coma to active maniacal delirium. He died in two days. An interesting thing that occurred in the epidemic might be noted here. One of the hospital internes on responding to croup calls on six different occasions found the patients had respiratory paralysis and poliomyelitis.

As to prognosis, it was sometimes extraordinary to see the rapid improvement in cases of this kind. The speaker had seen small bottle fed babies who were unable to take their milk at first, but in a short time were able to hold the bottle and feed themselves. There was often improvement in a few days, in the hospital, and this had strengthened the conviction that this was the best place for such cases unless the hospital conditions could not be reproduced in the home.

The Importance of the Present Epidemic.—Dr. Haven Emerson illustrated his remarks with charts showing tabulated records of 1,557 cases and 311 deaths in the present epidemic, but admitted that the records were not accurate, as thus far they only showed the date on which the cases had been reported instead of following the usual plan of giving the date of the onset of the disease. For instance, in May only five cases were reported, while in July fifteen cases were reported that had had their onset in May, and obviously there was no means of knowing how many abortive cases had existed. On June 20th, the rapidly rising incidence of the disease began, until the highest point was reached on July 11th. Since that time, in spite of the great heat, there had been a recession which it was hoped would prove permanent.

At the onset of the outbreak the health department could choose between alternative courses. One was secrecy and the possible control of cases without publicity. The other was publicity and hospitalization, which seemed to offer a better prospect of real control of the disease; this plan was followed. As a result there had been undue fright on the part of the public, which seemed unwarranted when it was considered that a study of the death rates for the city as a whole, of diphtheria, scarlet fever, measles, whooping cough, and diarrhea during the last six years, and for the first six months of this year, showed that in comparison the deaths from poliomyelitis had been few. During the first six months of 1916, there were 884 deaths from diarrheal diseases and only fifty-seven from poliomyelitis. The community looked with complacency on the former, while it was panicstricken over the latter.

This was probably the first epidemic of poliomyelitis in this city in which the disease had been made reportable and also the first in which there had been an effort at complete hospitalization. It was acknowledged that the present method of trying to control the disease was frankly an experiment. Reporting cases was new, placarding was new, and hospitalization was new. In 1907, it was not until November that the epidemic, then drawing to a close, was studied. At that time vital statistics were not as complete as now and so, while that epidemic was in progress, no study was made of it. In that epidemic there were probably 2,500 cases; there were 700 cases accurately studied by the sections in pediatrics and neurology of the New York Academy of Medicine in November, 1907. The mortality was twenty-seven per cent. During the present epidemic about 2,600 cases had been reported, but only about 1,600 of these had proved to be true cases. It was estimated that the total death rate in the epidemic of 1907 was five per cent.; during the present epidemic it had been 18.7 per cent.

The most important factors in dealing with the diseases were early diagnosis and putting all cases under early orthopedic and neurological observation which might save the individual and the public from the future burden that permanent crippling implied. The early recognition of the condition was the most **important factor in preventing** the spread of the virus among the healthy.

During the time of this epidemic, the first opportunity had been taken to make use of the concerted action of the hospitals. This would no doubt result for cooperation in the future and would favor scientific advance in the study of the disease. It would be of advantage to have a staff suited to meet the requirements of these patients, including a laboratory diagnostician, a neurologist, an orthopedist, and a pediatrist. It seemed advisable to urge hospitals likely to have these cases to have a staff of this type for dealing with an epidemic. Social service organizations could also be made use of to a greater extent than in other conditions. There was need of concentrated follow up work in the homes of all patients, which would be a great need for years after they had left the hospital.

Splendid cooperation had been shown by the private hospitals of this city, and adequate provision had been made in the City, Metropolitan, Bellevue, Nose and Throat, Babies', Lebanon, Presbyterian, Willard Parker, St. Francis, German, St. Vincent's, Orthopedric, Mt. Sinai, Ruptured andCrippled, Neurological, and Nursery and Child Hospitals, in Manhattan; the Greenpoint, Kings County, Kingston Avenue for Contagious Diseases, Long Island, Methodist Episcopal, St. Mary's, Norwegian, Lutheran, and Samaritan Hospitals in Brooklyn, St. Vincent's Hospital in West New Brighton, and St. John's Hospital in Queens. Quarantine and the services at Ellis Island had also been placed at the disposal of the health department in case it should be required. This cooperation was a notable contribution to the city's benefit and would probably result in some permanent plan that might be put to service on such occasions in the future.

The necessity for accurate knowledge of the whereabouts of every case in the city was illustrated by the following incident. In the routine course of inspection a limping boy met the health officers and led them upstairs in a house where another small boy, also limping, was found. The baby, which was sick, had been sent outdoors in its carriage. The mother had called in no physician, though all three children were in the acute stage of infantile paralysis. She explained that she did not think they were ill because they were active in moving about.

The speaker could not close his address without paying tribute to the degree to which men of the medical profession would sacrifice themselves to the public health. Many instances had arisen where physicians had for the time being lost their entire practice because they had been taking care of cases of infantile paralysis and their other patients had been afraid to come to them. Other physicians would no doubt see that these men did not suffer because of their willingness to sacrifice themselves for the welfare of those having need of their services, and it was hoped that wherever this attitude of fear of patients toward their physicians was met, it would be discouraged.

In closing, Doctor Emerson appealed for early diagnosis and a willingness to report cases on the part of the medical profession, for no health department, however efficient, could otherwise control an epidemic and secure proper police enforcement of its regulations.

Dr. Walter B. James recognized a doctor from one of the infected districts, who asked if some one present could give in detail the proper modern treatment for poliomyelitis.

Dr. Henry Koplik replied that, as the cause of the disease was still under investigation, it was not yet possible to speak of a specific treatment which at this time, instead, could only be systemic and systematic. The patient should be isolated and above all should be kept absolutely quiet. Any one in attendance on a patient should wear a gown and protection for the mouth and nose, and, on leaving the patient, should carefully clean his hands and face. A German physician in Munich had recommended that the patient be placed in a Bradford frame to insure absolute rest. He should have plenty of fresh air and an easily assimilable diet. The bowels should be attended to. Medication was confined to those drugs having an effect on the general nervous system. Lumbar puncture had three advantages; in the first place, the mere mechanical removal of a certain amount of fluid which might be toxic might be of benefit; in the second place, the examination of the fluid itself helped to establish a diagnosis; and in the third place, it relieved pressure. In paralytic cases, a cast might be applied to prevent contracture. If the contracture persisted after removal of the cast, the patient should be referred to an orthopedist. Anodynes relieved symptoms referable to the nervous system, but opium should not be administered unless absolutely necessary. Intramuscular injections of strychnine could be given as soon as the pain and fever had ceased. One fortieth of a grain daily might be given over a period of thirty days, selecting different groups of muscles for the injections. Warm baths sometimes proved a great blessing, except in the neuritic cases, if given without moving the patient too much. Massage in some instances relieves pain. In some cases iodide of potassium seemed to have an anodyne effect. In no case should operations for adenoids or tonsils be performed.

Dr William H. Park said that as the hour was so late his remarks would be very brief. If there was time, he would emphasize in detail all that Doctor Flexner had said, as in his opinion this review of the situation had been both valuable and interesting. It looks as if, with the efforts of such men as Flexner and Noguchi, the subject of infantile paralysis would shortly be clearly understood by all, and a specific cure discovered. He wished to draw attention to one point as so many of the speakers had done, and that was to the abortive cases; in every instance where it was possible to follow the infection from its source, it had been observed that the sixth person in line of infection had been the one to suffer most. The carrier spread it abroad to unknown places and in cases where there was the least suspicion, there should be isolation. The infection might be thrown out by dust; there were no known carriers, though it was known that the sick person and carriers threw out the contagion. If insects were found to be carriers, it would probably be in a subordinate way. It was difficult to believe that any given carrier or doubtful case was infectious through bacteria, as in cerebral meningitis. But if a diagnosis could be made through a culture, they could not act differently in handling the epidemic. It was of value to know that a case, whether doubtful or well developed, was the greatest source of danger to others, and that the carrier went out through the family or visitors to the bedridden, so culture or serum diagnosis was not necessary for the safety of others. If every carrier were labeled, it would have been impossible to do more in checking the epidemic than the health department was doing now. It was to be hoped that, basing the work on what had been done, it would soon be possible to announce the discovery of a specific vaccine.

Dr. Leon Louri, of Brooklyn, said that in half the cases he had seen there were no symptoms of paralysis. In a few, he had noticed a very interesting occurrence. They were taken ill with slight sore throat, slight febrile manifestations and malaise, and were treated by the usual iron mixture. In twenty-four hours the temperature was normal and the child went about as usual. On the third day, unmistakable symptoms of poliomyelitis developed with definite paralysis. If the disease could be recognized on the first day and the child placed in bed and kept so quiet that the nervous system would not be traumatized, the virus would not develop to the extent it did later. Early treatment was most important applied in abortive cases. A healthy person who had no disease in his family, might travel through an infected district and carry thence with him the virus of the disease and implant it elsewhere. The duty of every one was to call in medical men early to diagnose any case where there was the least suspicion of the presence of the virus, and not take lightly those symptoms which represented the so called types of poliomyelitis.

Dr Samuel J. Meltzer, of the Rockerfeller Institute, had decided to confine his remarks to one essential phase touched on by only one of the speakers of the evening, and that was the treatment of the disease. The discouraging fact was present that at this time there was practically no specific treatment for poliomyelitis, but he desired to bring forward three promising therapeutic measures based essentially on his personal work: Any inflammatory focus was surrounded at the periphery by zones of hyperemia, exudation, and edema. Thirteen years ago, in experimenting upon rabbits' ears, he found that an injection of adrenaline reduced the entire inflammatory swelling to a very small focus in the centre. The peripheral zones of edema and active hyperemia disappeared for some time. Several years ago, he and Doctor Auer found that an intraspinal injection of adrenaline into monkeys produced a lasting effect upon the blood pressure, longer than by any other method of administration; more than one hour might pass before the blood pressure returned to normal.

On the basis of these observations and on the further plausible assumption that the early stages of the paralytic effects in poliomyelitis were not caused by the chief inflammatory focus, but by the peripheral zones of active hyperemia, exudation and edema, the speaker induced Doctor Clark, then working under Doctor Flexner at the Rockefeller Institute to make the following experiments: Monkeys dying from experimental poliomyelitis received intraspinal injections of adrenaline The beneficial effect was most striking. Animals which were paralyzed and moribund at the time of the injection were seen several hours later eating bananas which they held themselves; the paralytic conditions were strikingly improved, and the life of the animals in some cases was prolonged for several days. The animals finally died; but in this series of Doctor Clark's experiments, all animals received surely fatal doses of the virus.

If the exudation and edema could be removed for some time, the life of a few, or of many children might be saved, that is, if in these cases it happened that the ascending progress of the actual inflammation became fixed. On the basis of these facts and considerations, the speaker recommended the intraspinal injection of adrenaline in every case of infantile paralysis, the injections to be repeated in from four to six hours. The procedure might save life and, in surviving cases, it might reduce the extent of the final lesion. There was no danger in this procedure. Monkeys stood well as large a dose as two c. c. in a single injection. However, in human infantile paralysis the injections should be begun with a dose of 0.5 c. c. of adrenaline until more was learned about the effects.

He wished to make two other suggestions in regard to treatment. One was the administration of artificial respiration by means of the Rockefeller apparatus for pharyngeal insufflation, as soon as the patient showed a degree of unconsciousness and respiratory insufficiency. This was an easy and trustworthy procedure. The second suggestion was to administer oxygen under pressure in a respiratory rhythm by an apparatus which the speaker had recently devised and used on human beings in several instances. It rapidly abolished cyanosis and might save life. It might even act specifically on the virus of poliomyelitis. It was impossible at this time to describe either of these apparatus or the mode of application or the results of experiments, but this would gladly be demonstrated at the institute if a number of physicians would signify their desire in this direction and arrange for a definite appointment.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE

Squint of Childhood, and the Importance of its Early Correction.—By Dr. R. H. T. Mann, of Texarkana, Ark., and Texas. (Read before the Greenville Meeting of the North Texas Medical Association, June, 1916.) It is not in any sense the object of this paper to discuss all forms of squint, but rather to deal briefly with squint occurring in otherwise healthy children, and, if possible, to emphasize the very great importance of its early correction.

Babies are not born with squint. It usually develops when they begin to use their eyes, and especially when in observing objects close by; and there is a distinct relationship existing between the tendency to look in and an effort to see near objects; consequently in eyes with poor vision, caused by certain abnormalities, where it becomes necessary to produce a greater effort to see distinctly, there is also produced an excessive effort to look in, and this strain causes the eye to squint. This class then is not a disease in itself, but only the symptom of a disease—the real disease being abnormality of the eye, causing defective vision.

A cure then can be obtained in many of these cases by correcting these defects in vision, thus relieving the eye of its strain. This can be done by properly correcting glasses. A very large per cent of cases can be cured in this way. Some, however, may need to have the accommodation paralyzed with atropine for a few weeks or months before a cure will result, and a few may need to have an operation.

From time to time, oculists have specified the age limit for the commencement of the treatment of these cases. There is not any age limit, nor can there be, when this treatment should be commenced. The time to begin treatment in any case is as soon as a defect is detected. Glasses can be easily adjusted at any time now by modern methods, and it is not necessary for children to know their letters as it was formerly.

If useful vision is to be preserved in the squinting eye, it must be made to perform its function, which it cannot do so long as it continues to squint. In fact, it has to suppress objects to prevent double vision. If the squint is allowed to remain too long, the retina does not develop, and the vision in the squinting eye is permanently impaired. The ordinary operation for squint after the eye has squinted for many years is useful for cosmetic purposes only, because the retina has not developed, and vision is consequently permanently impaired. If useful vision is to be maintained in a squinting eye, the squint must be corrected at the earliest possible moment, so that both eyes may be used together.—Texas Medical News.

Before The New York Academy of Medicine, Stated Meeting, held December 2, 1915, A Discussion of Acidosis with Special Reference to That Occurring in the Diseases of Childhood.—Drs. John Howland and W. McKim Marriott of Baltimore presented this paper., They stated that the term acidosis was very loosely employed in clinical medicine. It was assumed that the acetone bodies were very abnormal and signified an unusual complication in the course of disease, whereas their presence might be likened to fever, for acetonuria occurred in most of the infectious diseases of childhool with much the regularity that fever did. As hyperpyrexia might in itself be dangerous or fatal so, too, a production of acetone bodies might in itself determine a fatal outcome. It was not the mere presence of acetone bodies that determined acidosis. To understand how acidosis might be brought about, it was necessary to consider the method by which the body maintained its equilibrium in which there was a preponderance of bases over acids. The essayists described in detail the efficient mechanism by which the body guarded against the deleterious influence of acids formed or introduced into the body. These defenses were three in number, acted synchronously, and resided in the blood. They were the increased pulmonary ventilation by which excess of carbon dioxide was removed, leaving a neutral salt. Sodium oxybutyrate, or chloride, or what not, to be removed by the second defense, the kidneys. The third method of defense was afforded by the proteins and it depended upon their amphoretic character. The body possessed a further means of defense in that it was able to neutralize acid by the production of alkali in the form of ammonia. It was evident from a consideration of all these facts that there might be all degrees of acid production or retention, as a result of which it was difficult to set a limit and say when acidosis was present. The mere presence of abnormal acids did not indicate that acidosis was present, since they might be entirely compensated for the various means to which reference had been made. Severe and fatal acidosis might be present when no abnormal acids could be found. The means by which acidosis was recognized were, first examination of the blood or urine for the presence of abnormal acids, and, secondly, by determining the amount of ammonia secreted in the urine and in its relation to the total nitrogen excretion. A high ammonia coefficient always aroused the suspicion of acidosis, but unless this could be confirmed in some other way it could not be taken as conclusive proof. The methods which they had used in the cases described in this paper were chiefly the determination of the carbon dioxide in the alveolar air, Sellard's test, the alkali tolerance, the determination for the hydrogen ion concentration of the serum and the oxygen combining power of the hemoglobin. The essayists described each of these methods and showed why it was useful as a measure of over-production or of retention of acids in the body. In childhood acidosis resulting from the production of abnormal acids was found chiefly in diabetes and in recurrent vomiting. A study of diabetes in children shows very well the enormous amount of acid that might be taken care of with no disturbance of the reaction of the blood and with no effect upon respiration. In recurrent vomiting the conditions were more obscure and less understood than in diabetes. He had made observations on two cases of recurrent vomiting, a mild and a fatal one, in one of which the acidosis was clearly due to acetone bodies in the blood. They had studied chiefly the acidosis occurring in the diarrhea diseases of infancy and had found that infants with the severe diarrhea of infancy might die with no evidence whatever. This was true of the majority. On the other hand, a number of infants with severe diarrhea did develop evidence of acidosis, and the overwhelming majority of these died. The clinical evidence of the acidosis was hyperpnea. When there had been deep labored breathing without cyanosis they had always been able to obtain other proof of acidosis. They had found a low carbon dioxide tension of the alveolar air by use of Phesch's method modified so that it was applicable for use in infants, and Dr. Howland said he believed that they were the first to be sucessful in measuring the carbon dioxide tension in infants. They had found that the tension of the air in normal infants varied between 35 and 42 mm. while in acidosis it was less than this, frequently between 15 and 25 mm. With infants showing such a low carbon dioxide tension the Sellard's test was positive.

The Physiology and Pathology of Infancy.—Apparently for the first time in the history of medical education, there has been established at the University of Paris a chair of hygiene and clinical medicine of infancy. The first occupant of this chair, A. B. Marfan, in his inaugural address published in the Presse Medicale, January 7, 1915, points out how two events more than any other in France at the present time emphasize the importance of the conversation of the child life, namely, the diminishing birth-rate and the vast destruction of life incident to the present war. These circumstances impart a special significance to the foundation of a chair of infant hygiene in a university subsidized by the French government.

Infancy has its peculiar problems in physiology and pathology, a correct conception of which problems demanded a subdivision of childhood into three stages: the "petite enfrance," extending from birth to the end of the first dentition at the age of two and a half years; the "moyenne enfance," extending from this period to the beginning of the second dentition at six or seven years; and the "grand enfance," extending from the sixth or seventh year to the twelfth or sixteenth year. Each of these periods has its own problems, but those of the latter two are mere modifications of those of adult life, while the problems of the "petite enfance" are distinctly different and constitute a separate branch of medicine. There are no English terms which correspond exactly with the French expressions; possibly the same connotation is attached to the terms, infancy, early childhood, and later childhood.

There are three principles underlying the morbid reactions of infancy: (1) an acute disease in an infant previously healthy causes an inten se and a diffuse reaction out of all proportion to the benignity and localization of the acute disease, as may be seen in the case of acute inflammation of adenoid growths. (2) An infectious disease occurring in an infant does not remain localized at the point of entrance of the infectious agent: there is a wide extension chiefly by way of the symphatic apparatus, (3) chronic diseases in the infant, unlike those of the adult, are characterized by modifications of the general conlition rather than by predominantly local changes. The general manifestations are the arrest of growth and weight, a peculiar anemia resembling that of chlorosis, and a morbidly increased activity of the hemolymphatic apparatus, particularly of the marrow. It is the last reaction which Marfan regards as the essence of rachitis, or as he terms it, "asteolymphatism."

The retardation in growth and weight seems to be the most conspicuous fact in infantile pathology, but there are associated phenomena which are usually overlooked. One of these is the disappearance of the power to react to acute infections. In an atrophic infant these may arise without fever or nervous manifestations. Even the local signs may be all but wanting, as in the case of bronchopneumonia occurring in an athreptic infant, when careful and prolonged auscultation may be necessary in order to elicit the physical signs.

The older conception of infantile atrophy as a definite clinical entity has given place to one in which the atrophy is regarded as the constitutional reaction to vicious feeding, either insufficient, excessive, or inappropriate; to such chronic infections as syphilis, tuberculosis, and prolonged pyodermatitis; or to a subacute or relapsing bronchopneumonia.

At first glance, some of the observations made by Marfan may appear commonplace or even hackneyed, but on closer examination, one can perceive how the touch of genius, guided by unusual experience, imparts to these observations a new light and a new meaning. It is only by a full realization of the underlying principles of infantile pathology that one can hope to combat the awful mortality at the threshold of life. In these days when politics and science vie with each other in a wholesale slaughter of the flower of manhood, the necessity of conserving the newborn, the heritage and the hope of the race, receives an alded importance.—Med. Record.

Questions Every Mother Should Ask Herself.—At the end of Farmer's Bulletin, No. 717, issued by the Department ofAgriculture, as a review, the author, Caroline L. Hunt, suggests that at the close of the day every mother might ask herself the following questions, to be sure that she has considered the important things in feeding her children:

Did each child take about a quart of milk in one form or another?

Have I taken pains to see that the milk that comes to my house has been handled in a clean way?

If I was obliged to serve skim milk for the sake of cleanness or economy, did I supply a little extra fat in some other way?

Were the fats which I gave the child of the wholesome kind found in milk, cream, butter, and salad oils, or of the unwholesome kind found in doughnuts and other fried foods?

Did I make good use of all skim milk by using it in the preparation of cereal mushes, puddings, or otherwise?

Were all cereal foods thoroughly cooked?

Was the breal soggy? If so, was it because the loaves were too large, or because they were not cooked long enough?

Did I take pains to get a variety of foods from the cereal group by serving a cereal mush once during the day?

Did I keep in mind that while cereals are good foods in themselves, they do not take the place of meat, milk, eggs. fruit, and vegetables?

Did I keep in mind that children who do not have plenty of fruit and vegetables need whole wheat bread and whole grains served in other ways?

Did each child have an egg or an equivalent amount of meat, fish, or poultry?

Did any child have more than this of flesh foods or eggs? If so, might the money not have been better spent for fruits or vegetables?

If I was unable to get milk, meat, fish, poultry, or eggs, did I serve drier beans, or other legumes thoroughly cooked and carefully seasoned?

Were vegetables and fruits both on the child's bill of fare once during the day? If not, was it because we have not taken pains to raise them in our home garden?

Did either the fruit or the vegetable disagree with the child? If so, ought I to have cooked it more thoroughly, chopped it more finely or have removed the skins or seeds?

Was the child given sweets between meals, or anything that tempted him to eat when he was not hungry?

Was he allowed to eat sweets when he should have been drinking milk or eating cereals, meat, eggs, fruit, or vegetables?

Were sweets given to the child simple, i. e., unmixed with much fat or with hard substances difficult to chew, and not highly flavored?

Was the food served in a neat and orderly way, or did the child take time to chew his food properly?—New York Med. Journal.

The Prevention of Respiratory Disease in .Early .Life.—Royal Storrs Haynes (Arch. Pediat., 1916, xxxiii, 81) emphasis the fact that respiratory diseases in early life have not been diminished as have intestinal diseases. The infectious cold is the most vicious probably in its sequelae and complications and in its attendant lowered vitality which encourages other diseased conditions. The first five years of life are particularly susceptible partly on account of the effects of rickets, measles, pertussis and adenoid growths. Also the narrowness of the respiratory passages plays an anatomical part. Lowering of resistance is the primary cause and is brought on usually by exposure to cold, fatigue, auto-intoxication, poisoning by foods or chemicals. Among the factors to be overcome is the dust nuisance. Oiling and watering of streets tends to prevent outdoor dust. Vacuum cleaners, dustless dusters, wet-sweeping and the use of rugs instead of carpets is desirable. The smoke of large cities is an irritant and should be minimized as it markedly increases respiratory diseases. Crowding in houses, street car, trains, theatres, etc., is a great factor and its elimination tends to control a large part of respiratory diseases. The regulation and control of measles and pertussis, especially the early recognition and isolation of cases, the isolation of susceptible contracts and increased control in the reporting of cases would cut down the respiratory conditions attending these diseases. Regulation of attendance at school of children with respiratory affections is important. There is no such thing as a "little cold." "Open air" schools and "open window" schools minimize respiratory conditions. Proper care of children in the home through hygiene and sanitary measures, to keep up the resistance of the child is the most important prophylactic measure. Personal hygiene and the factors of food, clothing, ventilation, sleep and bathing are all important. The proper hygiene of the mouth is important as bacteria grow well there. The destruction or exclusion of the infecting organism and the preservation of resistance of the individual especially are the most important factors.—American Journal Medical Science.

Vascular Diseases in the Young.—Charles W. Chapman (Brit. Jour. Child. Dis., 1916, xiii, 97), in reviewing this subject, shows that arteritis is not infrequent in infancy and adolescence. This condition affects normal development and tends seriously to shorten life. From a large number of reported cases it would appear that inherited syphilis is probably the basic factor in the majority of cases al-condition is also caused by infectious diseases such as rheumatic fever, diptheria, scarlet fever, pneumonia, and tuberculosis. Among the reported syphilitic cases are aneurysm of the abdominal aorta in a fetus of eight months and seven cases of thoracic aortic aneurysm under ten years, many of them associated with arteritis. Thickened and tortuous arteries, often with ventricular hypertrophy and accentuated second aortic sound were found in toxemias, such as intestinal or nephritic in children under the age of puberty. Under proper treatment most of these signs disappeared. Numerous cases of calcification of the aorta and peripheral arteries are recorded in infants as young as six months and in children. Not all of these were due to syphilis. After a detailed account of four cases of arteritis in infants and young children, three of which were due to syphilis, the author discusses the diagnosis, prognosis and treatment. Under the first, arterial thickening should be looked for in the brachial and femoral arteries besides in the radials. Arteritis causes swelling and pain in the affected limb and aortitis shows a diminished resonance over the manubrium. History of syphilitic infection, stigmata or a positive Wassermann reaction are important factors. Arteritis due to toxemia from overfeeding or from the intestines usually improves under mercurial purges. The treatment is that of the infection causing the arteritis.—American Journal Medical Science.

Prognosis in Infantile Paralysis.—Walter G. Stern (Journal A. M. A., July 29, 1916) calls attention to the great amount of harm done by the medical profession in connection with this disease in making an incorrect prognosis. Whatever may be power with a more or less imperfect functional recovery, the prognosis should always be guarded, conservative, and truthful. If too much hope is given, the parents may be disappointed, and sacrifice all of the gain in strength in seaking a perfect cure. It should be remembered that the majority of patients make only an incomplete recovery of muscular power with a more or less imperfect functional result. Spontaneous recovery reaches its maximum in from three to six months, but careful treatment with physiological rest of the affected parts, graded massage, electrical stimulation, resistance excercises, and muscle training not only improve the chances of partial recovery, but also prolong indefinitely the period in which further recovery may take place. The most harmful influences and those most likely to impair the ultimate result are misuse, overwork, overstimulation, and overexertion, with resulting contractures.

Overfeeding at the Breast.—Overfeeding is a frequent cause of alimentary disturbances in nurslings, and may result in injury to the organism.

Nearly every mother primarily interprets the cry of her infant as due to hunger. If the mother yields to her feelings and feeds the baby nearly every time it cries, a condition of overfeeding readily occurs. Or in those cases where the milk secretion is over- abundant and the infant is very vigorous, overfeeding may occur before itis noticed.

For a time at least, every breast-fed infant tolerates an excessive quantity of breast milk. In a brief period, however, symptoms of food injury present themselves. The infants become restless, have disturbed sleep at night, vomit occasionally. They remain stationary or lose in weight. They may soon become flatulent, show an increase in the number of stools which become greenish in color and dyspeptic in character. The diarrhea leads the mother to consult a physician. The stools when evacuated are green or become green on standing. They are not homogeneous, they are inclined to be lumpy, contain mucous and soap curds, or vomiting may be a most prominent symptom. The vomiting may consist of single severe attacks or it may be characterized by frequent spitting of a small quantity of food until eventually weight disturbances occur, and the infant loses his healthy pink color and his happy demeanor. Severe colicky attacks are not uncommon. Disturbances of metabolism may be noticed or irregularity of temperature and lactosuria and mild symptoms of intoxication may occur. These children desire to sleep. They show forms of circulatory weakness, or indeed, actual ailmentary intoxication may occur. In these cases, too, some parenteral infection may occur and the baby be rendered seriously, if not fatally ill.

The treatment consists in the milder cases of reducing the number of meals to five in the twenty-four hours, and limiting the time of the baby at the breast. In the severer cases, a short period of starvation and weak tea with saccharin or water, followed by moderate quantities of breast milk.—Abt. in Detroit Med. Journal.

Acute Appendicitis in Infancy and Childhood.—W. G. Vincent finds that acute appendicitis occurs under the age of fifteen years much more frequently than is commonly supposed, and demands consideration because of its ferequency, and of its often insidious development, obscure symptomatology, special difficulty of diagnosis, and other peculiarities when affecting infants and children. The disease is most frequent in patients from five to fifteen years, rather uncommon under five years, and rare under two, and male children appear to be more often affected than females. The conditions we are most frequently called upon to differentiate are, gastroenteritis, pneumonia, diaphragmatic pleurisy, and intussusception. Among others occasionally to be differentiated are, subphrenic abscess, mesenteric glandular tuberculosis and localized tuberculous peritonitis, general peritonitis of unknown origin, fecal impaction, typhoid fever, strangulated hernia, pyosalpinx, inflamed ovary, or ovarian dermoid cyst, pyelitis affecting the right kidney, stone in right kidney or ureter, inflamed undescended right testicle, duodenal ulcer, intra-abdominal tumors, acute infections of right hip joint, and malaria. The author believes that, except in rare instances, we should no longer consider that there is a medical treatment of acute appendicitis. The preoperative treatment consists in rest and fluid, or on diet except water, and the ice bag as a placebo, if thought advisible, while waiting to confirm the diagnosis; no active catharsis while any doubt exists. After the diagnosis of acute appendicitis is made, possibly the ice bag or coil and opium in some form may be employed while preparation is being made for the operation, which should be done as soon as possible.—New York Med. Journal, of N. Y.

Infantile Paralysis and the State.—Dr. Hermann M. Biggs, State Commissioner of Health, has announced that one of the most important methods in the control of infantile paralysis is to keep children from infected districts separate from others and under constant observation so that they might promptly recieve proper treatment if any signs of the disease developed. In order that this might be more generally understood, a circular letter has been prepared by the State Department of Health and sent to the proprietors of all hotels and lodging houses, calling their attention to Regulation 5 of the Sanitary Code, which requires the proprietors of hotels, boarding houses, and lodging houses, and all other persons to report to the local health officer all facts relating to a person presumably affected with a communicable disease, and Regulation 4 of the Special Departmental Regulations for the control of infantile paralysis, which requires hotel proprietors, boarding house keepers, and all other persons to report the name and address of all children under the age of fifteen years arriving at their hotel, boarding house, or household. By this method Doctor Biggs hopes to have the health officers fully apprised of all children arriving in their districts who had come from centres where cases of infantile paralysis existed.—N. Y. Med. Journal.

The Incidence of Pulmonary Tuberculosis in Children.—McLellan (Liverpool Medico-Chirurg. Jour., 1914, xxiv, 333) makes deductions on the incidence of pulmonary tuberculosis in children from the recent investigations in this field. It is fairly generally accepted that the vast majority of children under the age of twelve years have been subjected to the attack of tubercle bacillus. In regard to the von Pirquet test, McLellan states the belief that as proof of active tuberculosis after the age of three years the test is unreliable. Also, that the younger the child the greater the reliance that may be put on the results and that in most cases the only deduction that may be drawn from a positive result is that the patient at sometime or other has been subjected to the attack of the tubercle bacillus. While Moreland's modification of the von Pirquet is most hopeful, no specific method has been devised by which to definitely decide whether the disease is in an active or passive condition. The opinion held by McLellan that glandular infection is a common occurrence and pulmonary tuberculosis is rare, he admits is not shared by the majority of practitioners. Large numbers of children are admitted to hospital with the diagnosis of phthisis, who have slight catarrhal symptoms or glandular involvement and who respond rapidly to ordinary hygienic and medicinal treatment and show no evidence of the disease clinically. McLellan's experience leads him to believe that as far as the lungs are concerned, practically all children suffering from tuberculosis die sooner or later from that disease. The first check on the diagnosis is the discovery of the bacillus in the sputum. The second check is the progress of the disease. While the very frequent cases of fibroid and bronchiectatic affections show the so-called classical signs of tuberculosis, they show the following essential differences from phthisis: No tubercle bacilli are ever found in the sputum. The process is essentially a chronic one, the cases going on three or more years with only slight alteration in the physical signs. Lastly, the child looks healthy, its cheeks are red, its appetite good, and it puts on weight. These conditions are much more common in children than is supposed and are frequently mistaken for phthisis. Tuberculous disease of the lungs is usually secondary to diseased thoracic glands and is comparatively infrequent, but very fatal.

BOOK REVIEWS

Diseases of the Digestive Tract and Their Treatment, by A. Everett Austin, A. M., M. D., Former Professor of Physiological Chemistry at Tufts College, University of Virginia, and University of Texas; Present Assistant Professor of Clinical Medicine; In charge of Dietetics and Gastrointestinal Diseases, Tufts College; Member of Amer. Gastroenterological Association, and Amer. Society of Biological Chemists; Physician to Mt. Sianai Hospital and Berkeley Infirmary, and Assistant to Boston Dispensary; Author of "Manual of Clinical Chemistry," etc. With 85 illustrations, including ten color plates. Price $5.50. St. Louis, C. V. Mosby & Co.

The author's purpose, largely, in presenting this volumn is to clearly outline in not too fulsome fashion the pertinent facts pertaining to the branch of internal medicine embraced in "Diseases of the Digestive Tract." While agreeing that all mankind have a common origin, yet the author points out that rarely and two members of the human race are exactly alike in physiognomy; similarly a diseased condition may present the same general features but at the same time afford individual differences. Therefore a working knowledge with these departures from the normal course of a disease rounds out an internist into a competent authority. These points in individual differences are clearly, concisely and intelligently brought out by Dr. Austin, who presents his facts in the aidactic rather than the deductive method, since the former plan permits a more complete picture of a diseased condition. The author attempts to show the correlation of gastric diseases with other organs—such as pulmonary tuberculosis, pernicious anemia, and nephritis, lest the student or practitioner be carried away with the thought that disturbances of the digestive function are the fons origo of all ills, to the exclusion of diseases of all other organs. Dr. Austin emphasizes with a "punch" that every successful diagnosis rests on four legs, history, physical examination, chemical analysis and Roentgenology. The author lays but little stress on pathology and then only when there seems to be a close connection between the symptoms underlying a pathologic condition producing them as for instance that of gastric ulcer and mesenteric embolism.

Dr. Austin is a most accomplished medical writer. He gained a great deal of this reputation while he was professor of Physiological Chemistry at the University of Virginia. His book entitled "Manuel of Clinical Chemistry" that was only recently published is one of the best books of its kind now in general use. In this book Dr. Austin lays great stress upon the dietetic, physical medicinal and many other conditions influencing digestion both in health and in diseases. We have never examined a book in which the illustrations were more appropriate. The eight-five illustrations with ten color plates are indeed very fine, they illustrate the text well, making the volumn complete. The article on Gastric Ulcers with its illustrations is worth the cost of this book. We cannot see how any practitioner who is interested in the diseases of the digestive tract can afford to be without this volumn.

This splendid volumn contains 552 pages including index and illustrations. It is one of the best works on the subjec,t and we heartily commend it.

Studies in Immunization Against Tuberculosis, by Karl von Ruck, B.S., M.D., and Silvio von Ruck, M. D. 421 pages—heavy cloth bingings. 'Price $4.00. Paul B. Hoeber, publisher—New York, 1916.

Probably there is no subject within the entire range of medicine concerning which so much has been written as that of tuberculosis. But the importance of the subject demands the most earnest study and it is fitting that those who have thus studied and learned most of that which is to be known with regard to the disease, should impart this knowledge far and wide. It is largely by education both of the medical profession and the general public that there is a liklihood of tuberculosis being eradicated or even of being greatly checked.

Drs. Karl and Silvio von Ruck are eminently qualified to write with authority on the question of tuberculosis and especially on studies in immunization against the disease. At the Winyah Sanatorium, they have had an experience extending over many years, and consequently their conclusions as to the theraupeutic efficasy of their vaccine employed in infected and tuberculous children since 1912 should be of very considerable value. In the book before us, the results of their experience in this direction are embodied. The authors take a tilt against the prevailing drug or rather therapeutic nihilism, and while acknowledging that "air, rest and good food" are the sheet anchors in the treatment of tuberculosis, yet stoutly maintain that the administration of drugs or of specific remedies are likewise generally if not always indicated. Drs. vonRuck deprecate the existing view that the merits of specific prophylactic vaccination rest upon a purely theoretical basis and was developed entirely on the ground of animal experimentation. They point out that this idea is incorrect, and that the impetus for their experimental work was supplied by long continued clinical observations, and its results were invariably controlled and verified by clinical tests. They claim that their method is, at one and the same time, effective and free from danger in a large number of individuals. von Ruck's Watery Extract of tubercle bacilli, according to the experience of the investigators, influences the clinical course of tuberculosis directly and favorably, and such results have been obtained by a therapeutic administration carried on by their methods, prolonged over periods of months and even longer. But it takes large doses of the Watery Extract to accomplish this object and therefore their present vaccine was devised and introduced.

The authors clearly explain in their work all that requires to be known of their therapeutic treatment of tuberculosis and therefore the book is interesting and of much practical value. It constitutes an extremely able defence of the specific treatment of tuberculosis and as such deserves to be widely read by members of the medical profession.

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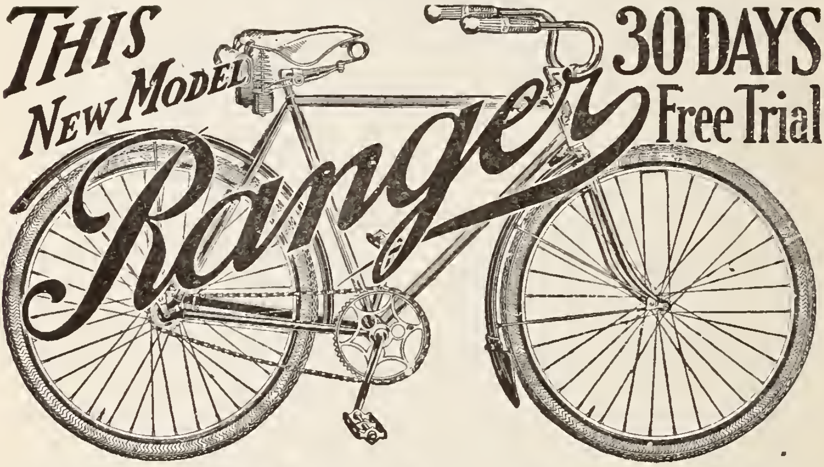

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PEDIATRICS

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EDITORIAL

THE SUBSTITUTE FEEDING OF INFANTS

While all who have studied the subject of infant feeding, more especially from the practical standpoint, agree that when available, mother's milk is almost invariably the best food for infants, yet allow that there are occasions when recourse must be had to some form of artificial feeding. The question of substitute feeding of infants is one that in its application requires a good deal of earnest consideration. Many a child's health is gravely injured and their future welfare greatly handicapped by careless or injudicious artificial feeding. In order then that substitute feeding of young children should be even fairly successful, it must be founded on a strictly scientific basis. The percentage method is founded upon these principles and if carried out properly will yield satisfactory results. But as pointed out by Dr. I. P. Crozier Griffith in an address delivered before a joint meeting of the Mifflin, Juanita and Huntington County Medical Societies of Pennsylvania, May 4, 1916, the percentage method does not recommend any fixed amounts of fat or protein, high or low. It leaves that to the physician and is merely a guide to an accurate way of thinking. Whatever milk we use, then, whole milk, skimmed milk or top milk, it is to be remarked that the proportion of protein is always the same as that of sugar. If this formula gives us two per cent of protein, it gives also two per cent of sugar, and the proportion of sugar can be increased by adding it in any amount desired. The percentage method does not mean that we are compelled to employ cream of standard strength, top milk, skimmed milk or whole milk. Any of these which is the simplest can be used, and gives the percentage which suits the case. The physician must determine what percentage the infant needs, and then choose the milk and dilute it.

It is superfluous to emphasize the superiority of human milk over any other milk however modified or prepared, as a food for infants, but when for some valid reason the natural food is unobtainable then substitute feeding must be relied on. Artificial feeding to be successful or even harmless, must be made the subject of much thought on the part of the physician, for upon his decision hangs, to a great extent, the physical well being of the child and to a lesser extent its mental welfare.

INFANT MORTALITY AND SOCIAL WELFARE

What connection is there between infant mortality and social welfare, and if there is such a connection is it a close one? The first part of the question is somewhat absurd for it is obvious to any thinking individual that there is a relationship between infant mortality and social welfare, but how intimate this relationship is, is "another story" as Kipling might say. Newsholme, the British public health authority lays much stress on the closeness of this connection, and goes so far as to say that infant mortality is the most sensitive index we possess of social welfare and then adds: "If babies were still well born and well cared for, their mortality would be negligible. The infant death rate measures the intelligence, health and right living of fathers and mothers, the standards of mortality and sanitation of communities and governments, the efficiency of physicians, nurses, health officers and educators." Which means to say that the country in which the infant mortality is lowest, not only contains the most intelligent and healthy fathers and mothers, but the most moral hygienic and efficient population. This is true to a very large extent, for those countries in which infant mortality is lowest, are distinguished by the intelligence and mortality of its inhabitants, for after all, mortality is a question of public health, where morals are lax, diseases flourish and vice versa. The Scandinavian countries are excellent examples of the truth of these dicta for by wise and far seeing methods they have so largely decreased their infantile mortality that at the present time, Sweden for instance, is in the first rank regarded from the baby saving standpoint. Up to the present time this country compares unfavorably with many European countries so far as a low infantile mortality is concerned. We are as lavish of life as we are of our material products and the day is fast approaching if it has not come already, when we must take steps to conserve our resources and especially our human resources. If Newsholme's dictum be applied to us, ''we have been weighed in the balance and found wanting.'' However, there are signs everywhere that in America, earnest men and women are awaking to the manace of infant waste and are putting and preparing to put efforts into force to diminish infantile mortality and to rear children that will be of use to the nation mentally and physically.

THE BOWEL FLUXES OF INFANTS

By bowel fluxes are meant all the diarrheas to which infants are liable, especially in hot weather of whatever origin. It may be said, at once, that improper diet and over feeding are the chief causes of the intestinal troubles of babies, and therefore the most certain manner of avoiding or of preventing diarrhea is by carefully supervising the food. Of course, when a bowel flux is due to infection by the amebic germs, for instance, ipeca is perhaps generally indicated, for the drug is antigermicidal to the amebae and to other infections.

When diarrhea is owing to injudicious diet or to a superfluity of food, the first and most obvious method of treatment is to regulate the diet and to see that it is suitable. Protein milk or buttermilk is usually efficacious in the correction of such diarrheas and sometimes large doses of subnitrate of bismuth are called for.

Dr. I. L. van Zandt read a paper on the bowel fluxes of babies in the Section on Medicine, Southern Medical Association, Ninth Annual Meeting, held in Dallas, Texas, Nov. 8-11, 1915, in which he discussed the question somewhat exhaustively. He divides baby bowel fluxes into three classes, each of which, he thinks, has its specific line of treatment. First, the green diarrhea of children living mainly on milk. Second, the diarrhea known as teething diarrhea and third, dysentery. Van Zandt is enthusiastic concerning the value of a combination of subnitrate of bismuth calomel and opium in the ordinary diarrheas of infants. Five grains of bismuth, one twenty-fourth of a grain of opium and one-twelfth grain of calomel for a child of one year of age and thereabouts. He always found this prescription to act as a charm. He further is of the opinion that the chief virtue of this prescription lies in the very small dose of calomel and quotes Forbes Ross as authority for the statement that the antiseptic action of bile is greatly enhanced by an infinitesimal quality of calomel. That calomel is frequently of service in the treatment of diarrhea in infants is the opinion of, perhaps, the majority of pediatrists but the most rational mode of treating these disturbances is by appropriate and properly regulated diet. Of course, in private practice it is difficult to exercisse the necessary supervision over diet and when this is the case the aid of drugs must be sought. However, the use of strong purgatives is almost always contradited in the treatment of any affection of children and it is wonderful to observe how intestinal troubles can be overcome by dietetic measures intelligently conceived and carried out.

CONTROL OF POLIOMYELITIS IN NEW JERSEY

The following is a notice issued by the Department of Health of the State of New Jersey:

"Trenton, Aug. 21.—The State Department of Health is gratified to know that the public health conference in Washington last week made recommendations for the control of infantile paralysis that are in substantial accord with the system of identification inaugurated by the requirements of the new chapter of the State Sanitary Code. New Jersey was among the first States to establish regulations dealing with poliomyelitis, because the situation in the State is somewhat more acute than elsewhere.

"Emphasis is placed upon the fact that the system is not a quarantine but is a system of identification. Quarantine occurs only when the regulations are violated.

"The purpose of the identification system is twofold: First, to give local health officials information concerning persons arriving in the community without identification certificates; and, second, to discourage traveling by children as far as possible, while at the same time providing a uniform system whereby necessary traveling may be done without unnecessary inconvenience.

"Attention is again called to the fact that it is the duty of local boards of health to enforce the provisions of the State Sanitary Code. This duty has been placed upon local boards by the legislature, and local boards of health cannot escape the obligation."

PEDIATRICS

ORIGINAL ARTICLES

THE DIFFERENTIAL DIAGNOSIS BETWEEN PNEUMONIA AND APPENDICITIS

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New York City

It must appear strange to those who have had little experience with such cases, that the differentiation of a lesion which exists in the chest from one which appears in the lower fossa of the abdomen, should test one's diagnostic ability.

During the past few years I have been impressed by the number of cases I have seen both in private practice and in my Hospital work, which have offered considerable difficulty to the physician in charge in making a differential diagnosis between pneumonia and appendicitis.

A most common error is to make a diagnosis of pneumonia because the patient exhibits a temperature, rapid respiration, possibly some dullness, and a slight cough. One must never forget that with every rise in temperature in a child there is always an increase in the number of respirations. Furthermore, one must always consider the possibility of a thickened pleura, the result of some of the former inflammatory condition in the chest. A slight catarrah, either acute or chronic, may account for an existing cough without any pathological change in the lung structure itself.

Without bronchial breathing being detected, the presence of a pneumonia can be demonstrated only if one can show distinct signs of a beginning consolidation with the X-ray, indicating that the area consolidated has not yet reached a larger bronchus, and giving the distinct bronchial breathing characteristic of pneumonia. Had this rule been adhered to in many cases, which I have seen, it would have eliminated any error in diagnosis.

Abdominal pain with pneumonia is not an infrequent concomitant symptom. The pneumococcus is an organism which has an elective predilection for attacking the serous membranes of the body, and it is quite probable that the pain which one so frequently meets with in pneumonia is due to the sāme organisms which may set up some inflammatory change in the peritoneum itself.

It is essential in order to make a thorough examination in a child, that the patient should be placed upon a bed or table, without any clothing whatsoever. It is well before making any physical examination to allow the child to remain on it's back for a number of minuets, and to watch and note carefully the character of the respiration. We know that in males the abdominal type of breathing predominates, while in females the thoracic type is more common.

With the patient exposed, one may also note any local hyperaemia; whether the intercostal spaces are shrunken or obliterated; whether the abdomen is held rigid or if there is free and flacid motion of the abdominal walls; whether the patient will lie with the lower extremities completely extended, or whether there is a tendency to draw up the thighs; whether the patient prefers to be on one side or the other, and any little details which the observant physician will interpret in favour of one disease or the other.

In examining the abdomen of a child it is well never to use the balls of the fingers, or any sudden pressure anywhere on the abdomen. A method which I always follow is to place the entire hand gently upon the abdomen and let it rest there for a few minutes in order to overcome the reflex irritability of the abdominal walls which is present in all cases, normal and abnormal.

After the reflex irritability disappears, and the child accustoms itself to the presence of the hand, one may then gently press, either with the fingers or the ball of the hand, in order to test whether there is any rigidity present or not.

In many cases of appendicitis, and particularly in those cases where the appendix lies retrocoecal, most of the tenderness and pain is referred to the region over the crest of the ilium, and the right lumbar region. It is just in these cases of retrocoecal inflammation, with or without abscess formation, that the breathing of these children is deceptive. The breathing characteristic of this condition is of the grunting type, and is produced by holding the abdominal walls rigid so as to use the abdominal muscles as little as possible, and with a short in- and ex-piration give the characteristic grunt which so often accompanies a pneumonia.

In these cases of pneumonia accompanied with abdominal pain if the palpation is carried out in the manner explained above, it is surprising how easy it is to differentiate the absense of any intra abdominal involvement.

Another important diagnostic aid is bi-manual palpation. This is accomplished by introducing the well greased index finger of the right hand into the rectum, using the left hand for counter pressure on the abdominal wall. It is surprising how much can be felt in this manner, due to the smallness of the pelvis in children. It is well before introducing the finger into the rectum, to note the local condition existing there, for often fissures of the same anus give rise to marked abdominal pains, due to reflex irritation from the pain caused by the passing stool over the raw surfaces caused by these fissures.

In order to demonstrate important factors in the differential diagnosis, I will review a few interesting cases:—

A. S. aged nine years was admitted to the Hospital with a diagnosis of pneumonia. He had a temperature of 103½; respirations 42; pulse 110; rapid respiration accompanied with a typical pneumatic grunt. He was placed in the Children's Pavilion, and the House Physician confirmed the diagnosis of pneumonia, and based his diagnosis on the following physical signs: Slight cough; high temperature; rapid respiration and dullness at the right base. As there was some abdominal pain present, I was called in to examine the case and corroborated the physician's finding. I could not however, demonstrate any bronchial breathing, and looked upon the existing dullness as the result of some former pneumonic inflammatory condition. When I demonstrated to the House Staff a marked abdominal tenderness, they explained to me that the boy had been struck with a base-ball bat a few days before, and that the pain in the abdomen was due to the soreness of the abdominal muscles. The pain in this case was rather high up near the crest of the ilium, and by careful palpation and rectal examination, I was able to show them that the lesion was due to the appendix, and that he was suffering, not with a pneumonia, but in all probability with a retro-coecal appendicitis with probable rupture. The X-ray examination confirmed the absence of any pulmonary consolidation. The blood count showed; three million red blood cells, 25,000 white blood cells, with a polynuclear count of 88 per cent. The case was operated and a large retrocoecal abcess was found and drained. The patient was discharged cured at the end of six weeks.

It is important in all these cases of appendicitis, not to allow yourself to be influenced by the previous history. Almost in every case of abdominal pains due to the distension of the inflamed appendix, the cause is usually referred to some indiscretion of diet, or some local accident, as in the case above referred to.

A case similar to the one just mentioned, was admitted to the Hospital a short time later, with the history of severe abdominal pain following a fall on roller-skates. Just what relationship a severe abdominal blow may or may not exert as a causative factor in producing an acute appendicitis, is purely academic.

To illustrate the opposite type of cases: J. C. aged six years was admitted to the Hospital complaining of severe abdominal pain of two days duration, accompanied with vomiting, headache, fever and chills. The boy was quite drowsy, slept a great deal, delirious at times, and had a slight cough. There was marked abdominal rigidity and tenderness but no local resistance could be felt anywhere. On examination of the chest, moderate dullness, and slight bronchial breathing which was distant could be demonstrated at the right apex. After a few days the abdominal rigidity disappeared, the consolidation of the upper lobe became more extensive, and the case developed typical symptoms of a lobar pneumonia. It is clearly demonstrated in a case of this sort, how easy it is to be mistaken in the early stages of a lobar pneumonia, when all the major objective symptoms are referred to the abdomen.

SUPERVISION OF THE HEALTH OF SCHOOL CHILDREN IN CINCINNATI*

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The health promotion of school children in Cincinnati is a function of the Health Department co-operating with the Board of Education. One hundred and eighteen public and parochial schools are included in our system. In sixty-seven schools (48 public and 19 parochial) the work of the physicians is supplemented by that of the school nurses.

A routine sanitary inspection of all school buildings is undertaken by the doctors at the beginning of each school year, after the Christmas holidays, and from time to time, in order to insure the best possible environment for the pupils and teachers.

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*Read before the Section on Hygiene and Sanitary Science, Ohio State Medical Ass'n, in annual session at Cleveland, May 17, 1916.

Last year examinations were made with reference to the seating of the children and lighting of class rooms. Several inspections of the night high schools were undertaken to see if the illumination of the class rooms came up to the minimum requirements by law. Reports and recommendations were gratefully acknowledged by the superintendent of schools who requested the business manager to make the necessary changes with reference to faulty seating and inadequate lighting as a result of the surveys made by the school physicians.

In a room specially provided by the school authorities, the district physician examines the following: Children who have been absent from school four consecutive days and those who are referred to him for examination by the principal, teacher and nurse. Comprehensive and systematic examinations of children in the second and third grades are also conducted to determine and correct, if possible, such physical defects as interfere with a child's efficiency in school life.

Of special interest from an educational as well as medical point of view were the physical examinations and study of 2,434 children out of a total of 4,738 pupils who were not promoted in the public schools at the end of the last school year. The survey was conducted by the district physicians assisted by the visiting school nurses. Of the total number examined, 1,143 were retarded one year; 669, two years; 365, three years, and 257 four years or more. Expressed in years of retardation we have a grand total of 4,604, representing an economic loss to the community of $138,000.00 based upon a cost of $30.00 per pupil per year. If the same ratio held for all failures the loss would approximate $275,000.00. We found that 1,236, or a little over half of the children, had marked physical defects. A tentative diagnosis of mental deficiency was recorded in 220 cases based upon 4 years of retardation without apparent cause. Home investigations were undertaken in 1,896 cases by the school nurses. In a general way we may summarize by saying poverty, crowding in the home, lack of opportunity to study, frequent change of residence, and the appalling fact that many mothers must work to support the family, contribute very materially to the retardation of children. We hope to circumvent further retardation in a good proportion of the children who had physical defects, by intensive follow-up work

We are again recommending to the board of education the establishment of a hospital school on the site of the Cincinnati General Hospital, for children handicapped with chorea, epilepsy, tuberculosis of bones and joints, who are not accomplishing much in regular classes, interfering, when they do attend, with the progress of normal children.

Opportunity classes tried out so successfully in one or two centres, should be extended generally for slow and backward children.

Compulsory attendance during the first year, admitting pupils at the age of seven, would cut down the percentage of failures.

Under the existing laws children are obliged to attend school until they have reached a certain age. It would probably be better if the law was amended, exempting certain individuals who should be compelled to go to work.

A minimum amount of retardation will always exist, due to illness, faulty home environment and other factors over which educators and public health officials have no control.

The report of the survey and the conclusion drawn with reference to the results, were acknowledged by the superintendent of schools, Randall J. Condon, with a desire to cooperate fully and to extend the organization of the schools along the lines indicated.

Vaccination.—Vaccination of school children is compulsory. During the last fiscal year 3,623 pupils were inoculated by the district physicians and I am sure as many more by general practitioners. It is interesting to note that over 95 per cent of the school population is vaccinated.

Fifteen thousand and twenty-one defects were recorded by the district physicians. The number of children needing treatment was 14,564. We are not including in this total the children with defective teeth as disclosed by the regular dental inspections. American cities offering statistical reports regarding defects treated show that anywhere from 10 to 80 per cent of the children needing treatment were benefitted. Last year in our city 86 per cent of the children recommended for treatment were cured or showed marked improvement. While a certain irreducible minimum of defectiveness must remain uncorrected, it seems certain that this minimum has not been reached. Let me cite a few concrete examples of the effectiveness of school medical examination:

During the last three years 4,320 children attending our public and parochial schools were discovered with defective vision. Two thousand four hundred and fifty-two of these children, or 56 per cent, were wearing glasses on or before April 20, 1916. Surgical interference was the method employed in treating 1,596, or 42 per cent, of the 3,754 school children who had diseased tonsils and adenoids.

Of the 14,564 children needing treatment last year, 3,046, or 20.9 per cent, consulted with the family physician; 4,746, or 32.6 per cent, applied to the various clinics, hospitals and dispensaries; 3,281, or 22.5 per cent, were treated by the school nurse for minor ailments and the eradication of pediculosis; 3,491, or 24 per cent, went without professional interference, trusting to home remedies and the like. You will note from the above that 11,073, or 76 per cent, of those needing treatment, applied for medical or surgical interference.

Eighty-six per cent of our work was accomplished in the school visited by nurses. The school nurse is the most valuable adjunct to school medical examination. The average number of pupils per nurse is approximately 2,600.

Mouth Hygiene.—We are still under obligations to the members of the Cincinnati Dental Society, especially the Oral Hygiene Committee, for their active and financial support during the fiscal year ending August 31, 1915. Nineteen careful and well planned inspections were conducted by volunteers of the Cincinnati Dental Society, assisted by the women of the Free Dental Clinic Society. Ten thousand two hundred and eighty-one children were examined, and of this number 8,326, or 81.4 per cent, were found with defective teeth.

When the midsummer crisis confronted us and it was found necessary to abandon the Free Dental Clinics August 1, 1914, the dentists responded by conducting a tooth brush sale which netted $3,986.00. The clinics were reopened and financed entirely for the rest of the year by the Oral Dental Committee. A temporary clinic was established in Carthage by the committee for the benefit of poor children in the section who for various reasons could not attend the down-town clinic.

Two thousand two hundred and twenty-six public and parochial school children patronized the clinics. Every effort is made to minimize the abuse of this charity.

On the first of January, 1915, the dental operators and clinic assistants were again placed upon the city pay roll, the committee continuing to pay for supplies, materials and the salary of the third assistant. The total amount expended by the committee was $2,350.42.

Conservation of Vision.—Under the direction of Prof. R. B. Irwin of Cleveland, the Board of Education has established three special classes for the benefit of those children who have such marked impairment of vision that they can not keep pace with the children in regular classes. The primary object of our classes is to teach the pupils as seeing children and to rescue them from a life of blindness and dependency. Everything is done to conserve what vision remains and to promote their general health. Standards for admission, proposed by a local committee of oculists, were adopted in May, 1915, following a conference arranged by the chief medical inspector.

At the present writing thirty-five children have been recommended by our oculists from among the cases referred to them by the school physicians. Of this number twenty-eight are being taught under ideal conditions. The Board of Education is now considering compulsory attendance of the other seven children whose parents, for various reasons, refuse to sanction the transfer.

General rules and regulations have been published for the guidance of teachers and nurses, and as a special feature we have arranged a course of lectures for teachers and normal school girls in training, covering the anatomy and physiology of the eye, fundamental principles in optics, and the various eye conditions on account of which children have been referred.

A course of this kind should be very profitable for the teachers. It certainly ought to strengthen the bond between them and the pupils.

Two children under treatment who participated in the conservation classes during the current year, will return to regular classes next September much improved and without the loss of any time.

The improvement noted in the children attending open air schools warrants additional classes. Instead of pale and delicate children as they were on admission, we see them with the roses in their cheeks, heavier, happier and mentally abreast with the children in regular classes. One is almost tempted to say, "Why place a premium on ill health?"

The average gain in weight of the children attending the school for tuberculosis children, situated on the site of the Municipal Tuberculosis Sanitorium, last year was 6.6 pounds. The children here are resident pupils. A beautiful new building with accommodations for fifty, on a seven-acre plot, has just been completed and is now ready for occupancy.

The average gain in weight of the children attending the New Guilford Open Air School was 6.2 pounds. In order to make up home deficits a morning lunch is furnished by the domestic science department. Some of the children partake a hot noonday meal in the penny lunch room.

The children in the Dyer Open Air School represent profound cases of anæmia from all parts of the city. The average gain in weight here was 5.6 pounds. The children in this school are given a hot noon-day meal prepared by the domestic science department.

Some extraordinary improvement was noted among these children; one boy who had been tuberculous gained 23 pounds; a girl in the same class, 14 1-2 pounds. Over at the New Guilford School one lad took on 18 pounds; and a little girl 10 1-2 pounds. At the Dyer School one boy gained 15 pounds and a girl 11 pounds.

In accordance with the laws of Ohio, the district physicians examine all children applying for work certificates in order to determine whether or not the applicant is physically fit to be employed in any of the occupations permitted by law for boys between 15 and 16 years of age, and for girls between 16 and 18 years of age. One thousand and forty-one applicants presented themselves. Certificates were withheld in 23 instances (a little over 2 per cent) pending the correction of physical defects. All applicants complied with the recommendation of the district physician. Light work was recommended for seven children who had organic lesions; six children were advised to take out-door work.

In any program of child welfare the Little Mothers' Leagues should occupy a position of prime importance. The intelligent interest displayed by the girls in Cincinnati who availed themselves of this opportunity to learn the principles of personal hygiene, home sanitation and the care of smaller ones at home, was remarkable; their enthuiasm and expression in the work was inspiring. Since the organization of the first Little Mothers' League in New York City five years ago, some provision is made for this kind of work in 75 cities.

In our own city the work was undertaken for the first time in the year of 1914, in eleven public and four parochial schools. Last year 1700 girls volunteered and this year 1200 were enrolled, a total of 4200 girls in 28 schools during the last three years. The attendance this year was not quite so large because we decided to limit the classes. We found by experience that when the classes are too large they become somewhat unwieldy.

The syllabus or outline of the course was prepared and later revised by the chief medical inspector.

Short talks were given once a week to the girls by the nurse, supplemented with practical demonstrations, such as washing the hair, manicuring the nails, care of clothing, dusting, sweeping, house cleaning, bathing infants, selecting and making their garments, etc. These conferences last an hour and continue over a period of ten weeks. The children were taught how to conduct themselves at meetings; they were well organized, officered by a president and secretary and governed by the ordinary rules of parliamentary procedure. Volunteers were given an official badge and those who attended regularly merited a certificate issued by the health department. The lectures are over, but the enthusiasm continues unabated. The girls are now making elaborate preparations for their exhibit and demonstration during baby week and the outing at Chester Park, June 15, 1916.

Cincinnati is particularly fortunate in having a citizenship alive to the needs of a growing and progressive city. The latest demonstration is seen in the proposal of Dr. Wade MacMillan, submitted to the Board of Health and the Board of Education and heartily approved by both boards, that a bureau of Child Welfare be established as a municipal undertaking. The function of this bureau is the examination of children under school age; its object is to correct conditions handicapping children before they enter school and to create a health sentiment.

The staff consists of Dr. Wade MacMillan, an experienced surgeon in orthopedics and the surgery of childhood; Dr. J. W. Bentley, a physician of experience in the diseases of children; and Dr. Lenore Doughty, an eye, ear, nose and throat specialist. All members of the staff serve without pay.

Mothers are encouraged by the kindergarten teacher to bring their children on certain afternoons to the school for examination. No medical or surgical treatment is offered. If pathological conditions are found the parents are referred to the family physician, hospitals, or clinics. Jewish children are followed up by social service department of the United Jewish Charities; gentiles, by the nurses of the children's department of the Ohio Miami Clinic.

Home Nursing.—We find the course of instructions on Elementary Hygiene and Home Care of the Sick outlined by the American Red Cross gaining favor. Classes were organized in Woodward and Hughes High Schools last year and the year before by the Board of Health, with the approval of the Board of Education, under the supervision of the nursing service committee of the local chapter of the American Red Cross. We believe that all high school girls should have the benefit of a few lessons in home nursing; not that we wish to encourage them to take up nursing as a profession, but rather that they should be able to assist intelligently in the home during time of illness.

The staff consists of 15 district physicians, 14 school nurses, 6 dentists, 2 dental clinic assistants and the chief medical inspector. With the exception of four district physicians in the suburbs and six dental operators who work on half-day shifts, all employes devote full time to the work of the health department.

The estimated budget of expenditures for school hygiene last year was $22,500.00 in round numbers. This is an average cost of a little less than forty cents per pupil per year, based upon an approximate attendance of 57,000 in the elementary grades.

Our reference manual explaning the various phases of school hygiene to the teachers, calling their attention to symptoms on account of which children should be referred to the inspectors, containing the rules governing the duration of quarantine, and instructions on "first aid" were distributed in all public and parochial schools.

It is a pleasure to state that we have had the hearty cooperation of the school superintendent, principals and teachers, hospitals and clinics. Without their assistance the work could not have been effective.

THE COMMUNICABILITY OF POLIOMYELITIS*

BY IRA S. WILE, M.D.
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Poliomyelitis is again evidencing its epidemic ravages. New York City is undergoing a severe strain owing to the extent of the outbreak and the unusually high mortality of the cases reported. The Department of Health with alertness and vigor has pursued a campaign to limit its spread and restrict its development in other sections of the community. The effectiveness of its control is limited, however, by a lack of accurate knowledge as to all the elements entering into the transmission of the disease. Considering that the victims of the disease themselves constitute foci of infection and that carriers abound who are likewise sources of danger to the community, one cannot help asking the question in how far has the New York epidemic been affected in growth or virulence by the numerous sanitary measures employed, by the hospitalization of cases, by the isolation and quarantine, and by the unusual exercise of the police powers of the Health Department.

It is recognized beyond question that the general sanitary regulations which have been enforced are of general service to the community in the prevention of all diseases. To what extent, however, this has been of specific assistance in the limitation of infantile paralysis is a subject which it is to be hoped will be made clear from the epidemiological investigations which are forming an important phase of the present campaign against the disease.

The plan of hospitalization centrally organized is new. There is much to be said in its favor as an excellent instrumentality for securing isolation and control of those infected and actually suffering from the disease. In the epidemic of 1907, however, children with poliomyelitis were received and treated in all the general hospitals, though no special effort was made to secure the actual control of all the victims. It is of the utmost importance to appreciate that despite the admission of sufferers from infantile paralysis to the general wards of hospitals, no secondary cases arose in any of the institutions among children or adults. There is an inherent danger in herding together a large number of young children in hospitals owing to the possibility of engrafting a second epidemic upon the primary one. The possibility of an outbreak of scarlet fever, measles, vaginitis, and similar contagious diseases is not entirely negligible and warrants consideration in connection with the entire plan.

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*American Medicine.

In the face of an extensive epidemic, where the period of quarantine is to be continued for six weeks, there is every possibility of all hospital beds being exhausted with a resultant exclusion of many sick persons whose ailments demand hospital attention in order to secure the best treatment. If it is not possible to make room for all the victims of infantile paralysis, a community is obviously compelled to return children to their homes for further quarantine before the six weeks' isolation has been made effective or else to continue the policy of home treatment with quarantine regulations of a large number of children, who cannot be accommodated in the hospitals,

In the rush for hospitalization, a comparatively small number of children have been admitted as suspected cases, or indeed diagnosed cases of infantile paralysis, whose actual condition later is found to be some condition other than that originally suspected or diagnosed. Thus far there are no authentic reports of such children having become infected through their enforced visitation to the hospital.

Health Commissioner Emerson has frankly stated that this plan is a sanitary experiment. Its evolution is to be awaited with interest. The least that can be said for the experiment is that is has presented an excellent opportunity to demonstrate the possibility of co-operation between the Health Department and the various hospitals of the community with a view to supplementing municipal activities in a constructive manner. This represents an important strategic development for the management and control of future epidemics of various types.

The greatest difficulty in controlling poliomyelitis arises from the fact that the abortive cases are too frequently overlooked and many escape medical attention, and thus keep in a community an unknown and, therefore, more dangerous group of contagium bearers. In addition to these, contagium carriers, who themselves evidence no signs of illness, abound in times of epidemics. It is believed that the number of carriers is in the ratio of five to one of frank poliomyelitis. The mere fact that an epidemic subsides is, of course, no criterion as to the effectiveness of sanitary control, unless the subsidence occurs during the period when theoretically the incidence of the disease should be maintaining considerable proportions.

Parents, in New York, have unfortunately been in a state of panic. Neighboring communities have arisen in fear and and have sought to limit the traveling of children for fear of permitting the dreaded disease to get a hold in their own communities. Reason and judgment on the part of health officers have been overturned to some extent in the desire to forestall an invasion of their own home towns. Their intentions are sincere and in accord with public health ideals. Their efforts at prophylaxis are commendable. Some of their methods are ill-advised. In how far their obsessive fears are justifiable it is impossible to determine until further knowledge with reference to communicability is available. It is the mysterious nature of the disease and its sequelae which have engendered such emotional responses. Communities have for years permitted epidemics of diphtheria, measles and scarlet fever to take a large toll from the infant population and to impair the health of their children without creating a sense of panic. Probably the reason for the present hysteria lies in the new policy of publicity. People have been receiving honest and frank statements as to the prevalence of the disease and the dramatic nature of its onset and the frightfulness of many of the paralyses have appealed to their imaginations which promptly have induced a state of mind where calm judgment is swept away.

It is timely for consideration to be given to the question of the communicability of infantile paralysis. Thus far the infective virus has not been demonstrated in the blood stream so that the theory of transmission by biting insects has not made a compelling appeal to the sceintific mind. The fact the blood thus far has not been proven to contain the infective agent is not positive proof, however, that it does not exist there during some stage of the disease. Flies. fleas, body lice, bed bugs and various other forms of insect life abound during the season when epidemics are most common, though it is true that epidemics have occurred during the winter months when entomologists would have difficulty in linking up the disease with insect hosts. There are, however, forms of animal life to which attention has not been specifically called which may perchance have some relation to the distribution of the disease.

The question of communicability is undoubtedly obscured in part by the failure of prompt recognition of abortive cases. It may be granted for the time being that direct transmission may arise from an infected patient or from a healthy carrier.

Certainly the degree of contagiousness is not very great. The infrequency of secondary cases resulting either from direct or indirect contact suggests that its communicability is far lower than that of scarlet fever, diphtheria or typhoid fever. According to Hill, of the State Board of Health of Minnesota, the percentage of secondary cases to primary may be reported as follows: Scarlet fever, 40 per cent.; typhoid fever, 30 per cent.; diphtheria, 29 per cent.; poliomyelitis, 17 per cent. Of persons known to have been exposed to diphtheria, scarlet fever and poliomyelitis, the percentage of persons contracting the disease was respectively as follows: Scarlet fever, 22 per cent.; diptheria, 17 per cent.; poliomyelitis, 6 per cent. The light on the comparatively low degree of transmissibility must of course take into account the inaccuracies arising from the fact that all abortive cases are not discovered.

It must constantly be borne in mind that the early stages of yellow fever and malaria indicated the possibilities of direct contagion for many years until the mosquitoes were found to be the responsible agent in transmission. In Allbutt's "System of Medicine" (1911) one finds the following statemen regarding yellow fever, which has a familiar sound at the present time:

"Of the epidemic characters of yellow fever more is known. When the infection has been introduced into a locality it usually appears in single or isolated groups of cases for the first two or three weeks or longer, and these are restricted to a particular district or districts. In this, as in other respects, it reminds us of the plague. After the disease has once escaped these limits it spreads with a rapidity proportionate to the density of the susceptible population, to the freedom of intercourse between the healthy and the sick, and to the degree of temperature; and its intensity is specially favored by overcrowding, want of ventilation, and, according to some, by an impure, undrained soil, and other insanitary conditions.

"When the contagion of yellow fever has been introduced into a non-endemic area the disease is spread by intercourse with the sick, or with contaminated persons, themselves healthy, by means of articles charged with the infection; by residence in or visits to infected houses; and it may be further propagated by aerial diffusion from house to house, if in close contiguity. The evidence of its communicability by means of water or food, or by the agency of mosquitoes, is inconclusive.

"It is right to say that these views are by no means universally accepted. As Hirsch points out: 'The most intimate kinds of contact—such as the healthy and sick sleeping in one bed, the attendance of physicians and nurses upon the sick, the use of unclean linen, clothes or beds of yellow fever patients, post-mortem examinations of their bodies, and the like—have in no wise contributed to the spread of the disease.' "

Osler, writing in 1901, made the following statement which shows how rapidly scientific judgments are altered by increased knowledge: "It is universally acknowledged that in the large majority of cases (malaria) the air is the medium of infection; whether the disease may also be directly conveyed by water has been much disputed; general opinion in the profession favors the view, experimental evidence is directly against it."

In **Surgery of Childhood** (1910) Willard presents a later idea of toxic infection which throws the responsibility mainly upon food supplies.

"The most reasonable explanation of the origin of epidemics (poliomyelitis) is that a specific virus is received through the digestive tract in the milk or food, which toxin penetrates to the central nervous system through the lymph or blood channels.

"**Autoinfection.**—The fact that the paralysis occurs so frequently after the digestive dusturbances of children or after scarlet fever or other acute exanthemata, would point to some form of autointoxication locating itself in the spinal cord with disastrous results. The increased nervous irritability of the infant during its period of dentition, together with the high temperature of summer and digestive disturbances as evidenced by cholera infantum, entero colitis and dysentery, are sufficient causes to induce autointoxication.

"Sitting on the cold, damp ground when overheated, so common in the play of children between 2 and 4 years of age, is often the productive cause of acute congestive cases. Trauma occasionally brings on an attack. The disease may attack healthy children and sickly children, rich or poor.

"**Contagion.**—In a few instances contagion seems to have been operative in a family or school, but the real causal influence in these cases may have been epidemic or infective."

During the Massachusetts epidemic of 1910, in 200 cases there was certain direct cantact with an acute case in 32 cases, indirect contact in 10, and direct contact with a possible abortive case in 4. Out of 186 families, however, only 13 had 2 cases and one family had 3. The mere fact of more than one case appearing in the same family is not necessarily indicative of contact infection, particularly when more than one case breaks out in a single family within 48 hours.

In the Buffalo epidemic of 1912 only 49 (18 per cent.) out of 273 investigated paralytic cases gave a history of contact, however slight, direct or indirect with any previous case which might reasonably be considered a case of poliomyelitis. Two hundred and seventy cases occurred in 267 families comprising a total of 1,513 people, of whom 762 were children under 16 years of age. Deducting the one primary case from each family there remained exposed to infection by association with these 1,246 persons. Of the 502 persons under 16 years of age exposed by association to infection by the 260 primary cases the total number of secondary cases were poliomyelitis 3 (0.6 per cent.), abortive poliomyelitis 3 (0.6 per cent.), suspected poliomyelitis 22 (4.4 per cent.) Of the 744 persons over 16 years of age there was only one suspected poliomyelitis case (0.23 per cent.)

From the evidence of these and similar figures, it is patent that poliomyelitis is not highly contagious as the term is ordinarily understood. This is accentuated by the fact that virus infective for monkeys has been recovered from the nasal mucosa after an interval of six to ten months.

Another item entering into the Buffalo epidemic was the difference in contagion among the cases recorded before and after the opening of schools. Of 202 cases occuring before the opening of school 13.9 per cent. were in children entered in school. Of the 84 cases occurring after the opening of school 29.7 per cent. were in children attending school. The 84 cases with an onset sebsequent to school opening occurred in 83 families. At first glance these figures would suggest that the schools played an appreciable part in spreading the infection. A survey of the incidence of the disease in various sections shows that there was no grouping of cases in any particular schools to any greater extent after September 3d, when the schools opened, than was found among the cases developing before that time in relation to the schools at which the afflicted children are registered. Commissioner Fronczak's conclusion is "that if schools did play a considerable part in disseminating the infection after their opening, it was not so much from recognized as from unrecognized sources of infection among their patrons."

It would appear at the present time that whatever may be the rate of infection, the principal contagium possibly arises from sources other than the recognized cases. Whether or not this conclusion is warranted, the recent studies of the New York epidemic should certainly demonstrate. If, however, this should be proven to be the case, we shall be in a position to judge the advantages and disadvantages of the modernized efforts to control the epidemic. Until data of this character are available, it is impossible to pass judgement upon the effectiveness of the methods by the Department of Health.

In the presence of a large mysterious epidemic with high mortality and the likelihood of a number of potential citizens reduced in physical effectiveness, it is only proper that a health department should take advantage of every known means of attacking the problem. Practically for the first time there has been organized a large working force, including the entire corps of the Health Department, the scientists of the State and the nation, together with the hospital and laboratory facilities of a metropolitan area, engaged in an active study of the nature of the epidemic during its progress.

Thus far therapeutics is silent as to cure. There is sufficient knowledge of management of individual cases to warrant prompt attention to the sufferers with a view to minimizing the damage inflicted as a result of the infection. The prevention of deformities is of maximum importance. As a specific infection, general in nature, with local manifestations in various parts of the body, with the greatest force apparently spent upon the nervous system it has thus far baffled all efforts at cure. Meltzer's suggested use of adrenaline by intraspinal injection merits trial.

The various classifications which have been made are of scientific interest, but thus far refer principally to those types in which the manifestations are to be found in the cerebrospinal system. Those types of the disease which are collectively termed abortive and which present mild and easily overlooked symptoms in the gastro-intestinal and respiratory tract are probably of more importance from the standpoint of prophylaxis than those with frank paralysis, more or less extensive.

The fact that over 90 per cent. of the cases occur in children under the age of 5 years, and indeed largely during the first three years of life, throws this disease into the category of diseases of childhood. The median age of death from this cause in 1913 was 3.9 years. It is hoped that the present epidemiological, clinical and laboratory studies will not end merely in more detailed classifications of the disease, but will reveal further important facts to aid diagnosis. The monumental result whose achievement is sought is the method of transmission and further satisfaction of Koch's laws as to the nature of the infecting agent and the means of identifying the contagium bearer. From a public health standpoint the prophylaxis of infantile paralysis is the most serious problem of the present time.

The endemicity of the disease is recognized. During 1915 there were 1,660 cases recorded in 24 States of the Union, with admittedly incomplete reports, particularly lacking in accurate figures for the abortive cases. In the registration area there were recorded in 1910, 1,459; in 1911, 1,060; in 1912, 1,136, and in 1913, 864 deaths. The annual average for 1901-1905 was 1,589 deaths, and the average for 1906-1910, 2,736 deaths. The average annual rate per hundred thousand population for 1910 was 2.7; for 1911, 1.8; for 1912, 1.9, and for 1913, 1.4. This death rate per hundred thousand population for the registration area was greater than that of smallpox, rabies, Pott's disease, disseminated tuberculosis, scurvy, but was tremendously exceeded by such as typhoid fever, malaria, measles, scarlet fever, whooping cough, diphtheria ,influenza, tuberculosis, syphilis, meningitis, convulsions of infants, the pneumonias, diarrhea and enteritis, and similar diseases which are prone to occur during infancy and childhood.

Assuming an epidemic in New York City with 2,500 cases of poliomyelitis in an estimated population of 5,600,000, there would be a rate of 44.6 per hundred thousand population. With a high mortality rate of 20 per cent., the death rate would be 8.9 per hundred thousand population. Bearing this fact in mind, it must not be forgotten that New York City's death rate for 1913 from measles was 13.9, from scarlet fever 11.0, from whooping cough 7.7, from diphtheria 26.1, from tuberculosis meningitis 15.7, from diarrhea and enteritis under 2 years 73.5, from congenital debility and mal-formations 84.2. If the present epidemic should consist of 5,000 cases, the rate of incidence would be 89.2 per hundred thousand population and with a fatality rate of 20 per cent., the death rate would be 17.8 per hundred thousand population.

These figures are presented in this way in order to show the needlessness of the present hysteria. Without a knowledge of the facts of municipal infection, the citizens of New York City have been constantly exposed to more serious death dealing diseases without evoking such a mob response. The campaign against infant mortality has been continuously waged with sane judgment, scientific forms of attack, and great results have been accomplished. Even when mothers feared the second summers for the children, there was not such a mad exodus of hysterical parents as is to be noted to-day. Fear is the dominant passion, and merely because relative values are not clearly established in the minds of the more intelligent and rational part of the population.

People to-day are fleeing to small communities where the presence of a single case of poliomyelitis represents as great or a greater source of danger than exists in the City of New York. To illustrate, one case of poliomyelitis in a city of 25,000 inhabitants is at the rate of four cases per theoretic population of 100,000. It requires 226 cases of poliomyelitis to appear in the City of New York to create the incidence of four per 100,000 population. A single case of infantile paralysis in a community of 10,000 is a theoretic rate of ten per 100,000, which is equivalent to 560 cases appearing in the City of New York. The large dilution of infantile paralysis cases in New York City due to the overwhelming population makes New York, even with the present epidemic, a reasonably safe place on the doctrine of probability of infection.

The susceptibility to an infection with the virus of poliomyelitis apparently is not great. Only a comparatively small proportion of the population is attacked though the virus may be widely distributed among the healthy population. Natural immunity may be responsible for this fact, but here again one enters the realm of conjecture.

The horror engendered by the fear of consequent deformities may be mitigated by realizing a few items. According to Wickman, at least 25 per cent. are abortive cases without paralysis. Complete recovery, or at least functional recovery, occurs in certainly 25 per cent. of the paralyzed cases. This will be increased as more rapid diagnosis and deformity preventing treatment is instituted. The period of recovery of function may require one to four years' patient care. Assuming a mortality rate of 20 per cent., there will thus remain about 40 per cent. with permanent deformities and impairments of function in varying degrees. In contemplating these unhappy residua let the calm prognostician recall the damaging handicaps of heart, lungs, eyes, ears, joints and kidneys that are bound up in the human story of tuberculosis, measles, scarlet fever, whooping cough, rheumatism, syphilis and other diseases of infancy and childhood. There is ample opportunity then for optimism regardless of the oppressive fear of permanent disability for useful service.

The Health Department should receive every support possible from the medical men of this community and in all sections of this state and other States in allaying the hypertrophied fears of the populace and arouse them to an understanding of the facts connected with poliomyelitis. The medical profession itself should endeavor to combat the hysteria of the community and bring back as far as may be possible a rational point of view to the populace in the face of the present epidemic, whose seriousness is not minimized, but whose contagiousness can only be estimated in relative terms. Physicians themselves are feared by many parents as spreaders of contagion, and many practitioners engaged in fighting the epidemic are already sacrificing their practice, as Commissioner Emerson has publicly announced, because of the exaggerated and undiscerning fears of parents, while the physicians are engaged in a splendid public service.

The wisdom of the profession, in the light of its common knowledge and general information upon the subject should be marshaled to the support of the Health Department and the authorized officers of the State of New York with a view to controlling the present epidemic, limiting the disabilities, investigating possible sources of contagium, in raising the sanitary standards of the community and in devising sound schemes for municipal prophylaxis against this scourge which at present has devastated many bodies, but has undermined many more mentalities. Poliophobia is to be discouraged, and physicians should be the first persons to rally to this form of public service.

SOCIETY TRANSACTIONS

COLLEGE OF PHYSICIANS OF PHILADELPHIA

Joint Meeting Held July 13, 1916, at 8:30 P. M., under the Auspices of the Department of Public Health and Charities of Philadelphia, The Philadelphia County Medical Society and the Philadelphia Pediatric Society, to Discuss Anterlor Poliomyelitis.*

Dr. John D. McLean, Pres. Philadelphia Co. Med. Soc. in the Chair.

Infantile Spinal Paralysis.—Dr. Charles K. Mills said that experience with this disease pointed to the fact that the malady was infectious or microbic in origin and tended to spread by at least two methods, through certain occult atmospheric or climatic influences, and by contagion. The healthy children of a family should be removed to other neighborhoods and the sick quarantined. Through the work of Flexner and others the measures were known which should be taken to prevent the spread of the disease by the secretions of the nasopharynx and the intestinal excretions. Good nursing played a large role in the treatment of infantile paralysis in all periods of the disease. Rest of the body and mind was said to be in the highest degree important. The virtue of a quiet and composed manner should be rembered by the nurse and enforced by the physician. Light and sound should be excluded during the acute febrile stage; also insect life. The closest attention should be paid to keeping clean the nose and throat by gentle spraying with solutions of hydrogen of peroxide or other germicidal solutions. Attention should also be paid to the intestinal excretions. With the appearance of paralysis and contractures the limbs should be kept in positions less liable to lead to subsequent deformities. Massage should not be used until the fever had largely disappeared; at first it should be employed simply as a gentle stroking. Instead of the patient being lifted out of bed, the position should be changed in bed. A typical case of the disease was easy of recognition within three or four days after the onset of fever. It should be suspected before the paresis appeared. The presesce or absence of pain and hyperesthesia might be of value in determining whether or not the lesion was closely limited to the spinal cord or higher regions of the neuraxis or whether meningeal implications were shown. The physician should not make the mistake of supposing he was dealing with simple meningitis or neutritis when the fundamental disorder was poliomyelitis. In a neighboring epidemic of poliomyelitis one of the most essential things

*N. Y. Med. Journal, July 27, 1916.

to remember was the frequent existence of abortive and aberrant cases, so atypical that their nature was doubtful. Such cases were as much a source of danger to the uninfected as those fully developed. As a neurologist Doctor Mills' attention had been called in a striking manner to mistakes in diagnosis in severe cases of poliomyelitis, especially those showing bulbar, cerebellar, or cerebral lesion. He had seen in consultation cases in which the diagnosis of brain tumor or meningitis had been made. He would, therefore, emphasize that during the prevalence of poliomyelitis, patients presenting cerebral, bulbar, or cerebellobulbar symptoms should be closely scrutinized lest they have cases of poliomyelitis of unusual localization. Unless the physician was aware that in the aberrant types the disease might attack practically any part of the brain or cord he was likely to be misled in diagnosis. On the other hand, instead of the abortive case the physician might be confronted with febrile symptoms of the most severe character. In three such cases of which he had knowledge the condition had been thought to be cerebrospinal meningitis, tumor, or abscess; in two instances, typhoid fever of the cerebral type. Since the disease prevailed epidemically in June, July, August, and September, whenever possible, children of an infected community who presumably had not been infected, should be removed to places supposedly immune. It should also be remembered that children should not at once be mixed with others who had been brought from a region in which the disease had not existed. Emphasis was placed upon the necessity of isolating children removed from a locality in which the disease was epidemic until the period of incubation was past or after the elapse of two or three weeks.

Poliomyelitis; Diagnosis.—Dr. James H. McKee remarked that there was little that was characteristic about the onset of poliomyelitis, many of the symptoms simulating those of other infections and of some autointoxications. There was nothing typical connected with sudden onset, with moderate fever lasting usually for several days; the constitutional symptoms, or the fact that the attacks sometimes followed other infectious disease. This was particularly true of the poliomyelitis types. The nervous symptomatology, however, was suggestive during the prevalence of epidemics. It was not usual for babies and very young children to have severe pains in legs, arms, fingers, and toes, and to have headache and backache. This was also true of the associated general tenderness, and the rigidity of the neck. There were relatively few things in early life that caused such symptoms. Laboratory examination of the blood and of the spinal fluid here gave undisputed evidence. Another symptom uncommon in infancy and early childhood and which often led to the diagnosis of "rheumatism" was profuse sweating. Scurvy was to be considered in the differential diagnosis. This, however, was a chronic affection with slow onset and definite history, and usually a febrile. Tonsillitis in early life might be accompanied with severe pains. In the various conditions to be considered, however, the laboratory gave convincing aid. In the treatment of the paralysis the patient should be mainly under the care of the orthopedist.

In the prevention of poliomyelitis. prophylaxis in general was to be observed. Since the disease occurred particularly in the hot months of the year children should be taken out of the large cities. The patients should be segregated, much attention should be paid to the care of discharges of the nasopharynx and of the bowels; animals might be carriers and should be excluded from the patient. Attendents should wear uniforms, and preferably, rubber gloves. Cleansing of the nasopharynx was highly essential. The bowels should be opened freely; nothing better for this than calomel followed by oil or salines; or the giving of hot baths with as little disturbance of the patients as possible. Since sweating was probably one of Nature's efforts to eliminate toxins, this should be increased as much as might be proper In presence of meningitis, lumbar puncture seemed wise for the reduction of pressure and the lessening of toxicity. Great emphasis was laid upon the necessity of absolute rest and quiet The protection of the paralyzed parts with cotton, wire frames, etc., was essential to sucessful treatment. Voluntary activity should be resumed very slowly. Hope for recovery of the paralyzed part should obtain, not only for a year. but for many years

Poliomyelitis; History.—Dr. Paul A. Lewis recalled that six years previously, before the College of Physicians of Philadelphia he had given a summary of what up to that time had been done in the study of poliomyelitis. which summary had been given from the results in the laboratory of the work of Dr. Simon Flexner and himself. Two years ago. Doctor Flexner had made a statement of the work he had done with other associates in the meantime. Since then little progress, Doctor

Lewis said, had been made. With Doctor Mills and Doctor McKee he could in no way disagree: they had covered the ground so far as their statements went. He referred to the article by Doctor Flexner appearing in the Philadelphia Public Ledger for the 9th inst., in which the author had summarized his experience in the matter of poliomyelitis. While there were slight corrections to be made in the publication, so far as the laboratory work was concerned the latest evidence was given. Doctor Lewis in giving his own experiences, said that as all knew, poliomyelitis was understood to be an infectious disease and in greater or less degree contagious. Its cause was known, and to the elect few who had had opportunity to work with the disease in the laboratory its cause might be said to be well known. The essential cause had been discovered six years ago; three years ago, with the actual cultivation of the organism, by Flexner and Noguchi, the causative organism had become more perfectly known. Six years ago, inoculations had been made from the spinal cord of the human dead of the disease into the monkey's brain and the disease had been reproducer in characteristic fashion. From the infected monkey the disease had been

istic fashion From the infected monkey the disease had been

transferred through others to many hundred, and up to the present time the series had possibly reached hundreds of actual passages. It had been found shortly after that the infectious material from the central nervous system of the human subject could be passed through filters sufficiently small to remove the bacteria, and there would still be a fluid highly infectious. This, he said, established the fact that the microorganisms were of the well known bacteriological status, small enough to be passed through filters, and difficult to see under the microscope. Some such might be bacterial in nature and could be cultivated as were other bacteria; others were probably protozoa, such as the virus of yellow fever, and transmissable only through an intermediate host. The virus of poliomyelitis seemed to be of the former class. While it had been said that the organism was ultramicroscopic, it could be seen. It was so small, however, that nothing could be told of its structure as was possible with, for example, the tubercle bacillus. While the cause of poliomyelitis had been known chiefly through the work of Flexner and his associates, these experiments had been confirmed and extended by others. In regard to transmission, that study had revealed to a certainty that it was by contact. On the other hand, there might be other methods of transmission. Certain bizarre facts in connection with the disease were not easily explained on the basis of contact. They could not go astray, however, in taking the assumption of contact as the starting point of combating an epidemic. One difficulty in guarding against contact was because many cases were abortive to the extent that the individual showed no sign necessitating the calling of the physician and no sign which would lead the physician to be positive in his opinion whether the patient had been suffering from any infection to say nothing of polomyelitis. The cases with absence of paralysis were quite as dangerous to the unaffected as the paralytic. He expressed the fullest assurance that the Department of Public Health was fully equipped to deal with an epidemic, should such an unfortunate occurrence take place in Philadelphia. In the study of the epidemiology of the disease, under certain conditions the laboratory could help greatly. The laboratory, however, had done its best work in showing that individuals in contact with the infected were frequently carriers of the disease. The laboratory had also confirmed the clinical observation of the existence of a mild abortive or subparalytic form of the disease. Furthermore, the presence of the virus in the nasal secretions had been demonstrated. Emphasis was placed upon the fact that the laboratory showed the importance of prophylaxis from the standpoint of the contagiousness of the disease. In the therapeutic control of the disease the laboratory had produced nothing of practical importance beyond the fact that certain experiments by Flexner and his coworkers had shown that the serum of immunized animals and some chemicals could under certain conditions mitigate the disease in monkeys. On the other hand, the fact these workers had not shared ther work with the public was to him sufficient evidence that they had not found a cure for poliomyelitis. Anything that the newspapers might say to the contrary should not cause excitement.

Infantile Paralysis; Prevention.—Dr. J. Torrance Rugh said that the treatment of the ravages of infantile paralysis developed ultimately upon the orthopedic surgeon. There were, however, many things which the general practitioner should know regarding the care of these patients during and following the attack. The great essential in the aftertreatment of these cases was absolute rest. They would be importuned by the family to allow the patient to sit up, or to move the affected leg or arm. They must not let it be moved; they must keep that part still, at absolute rest! The treatment as advocated by Oppenheim and elaborated by Lange of fixation in plaster of Paris to secure rest, essential for restoration of function and the carrying away of the products of the inflamation, had given by far the best results in these cases. The great trouble, however, was the difficulty in securing the cooperation of the family in allowing such fixation. Any treatment, so far as their experience went, which was directed to the nerve centres themselves had met with utter failure. Certain electotherapeutists alleged ability to restore to a very much greater degree the nerve function of these nerve centres than could be accomplished by any other means. But here entered the great problem to which Doctor Mills had greatly called attention, that in all grades of infection, from the abortive to the fulminating, no man living knew how far recovery of paralysis would take place without any aid whatsoever Some of these cases which had been totaly paralyzed, ended in recovery with apparently no evidence of the disease. Therefore, to ascribe to any one method of treatment curative effects so far as the nerve centres were concerned, was entirely out of the question. Their efforts must be directed chiefly to the care of the paralyzed parts. There was too great a tendency to begin the use of massage and electricity too early. These muscles must be put at complete rest until all evidence of the acute condition had subsided. Then the tonic treatment by massage, electricity, or whatever means were employed, should be begun in the endeavor to maintain the tone of the muscles and the life of the muscle fibres. The muscles were kept at rest to guard against any strain which tended to increase degeneration of the fibres. There must be also the prevention of faulty postures. As a result of the acute inflammation in the structures faulty postures began extremely early, even before they showed themselves to the eye or the finger of the examining surgeon. If the paralysis affected the trunk muscles, the child should not be allowed to sit up. If the paralysis affected the legs, the patient should not be allowed to walk, as there was nothing to maintain the weight of the body, except the ligaments, and they were insufficient unless supported by the muscles. Therefore, when the muscles were paralyzed, the earliest thing to do was to keep the parts absolutely at rest, keep them from assuming a deformed position, and guard them against strain. When the child began to walk, the extremities should be maintained in their proper position. It was surprising in many instances, the great amount of power which would return after four or five years when these muscles which had been subjected to sonstant strain, had been protected and the parts maintained in the proper position. If there was any tendency to deviation from the normal position, a brace should be applied to the part. The indications for the application of braces were definite, whatever condition might be present and no brace should be applied, except to accomplich certain absolute needs. The therapeutics of a brace were as accurate as those of a drug.

Another measure of value to be employed early was that of having the patient practise voluntary movement of those muscles which had not been totally paralyzed. By giving the child voluntary control over a group of weakened muscles, the opposing muscles would be prevented from drawing the part into a deformed position, and when the child walked he would be able to maintain a correct position. In cases in which there was total loss of power, operation offered a great deal in treatment. This, however, brought in aportion of work which belonged to the specialist, and any man who attempted work of this kind unless he was trained to it, would meet with absolute defeat in the treatment of these cases. The surgical treatment of infantile paralysis was divided nto the two great classes of destructive and indestructive surgery. Constructive surgery was indicated after two years had elapsed since the attack of the paralysis, and consisted chiefly in the transposition of tendons, silk inserts, and similar measures. Destructive surgery, which aimed at securingstability at the expense of certain structures of functions, should not be employed until six years had passed, and in the selection of operations, those which utilized structures already existing were to be preferred to those which made use of foreign substances for various purposes.

Dr. Wilmer Krusen, director of Public Health and Charities, Philadelphia, said that of the two eases of reported infantile paralysis now in the Municipal Hospital, one was a case of true infantile paralysis; the other, a case of infantile paralysis, but not of the poliomyelitis type. They had found that the child's paralysis was due to a cerebral abscess following middle ear disease. They had, therefore, only one case of true infantile paralysis. They could readily understand that with such a severe epidemic in New York and Brooklyn, their work in connection with the department of health had been most aggressive. While they believed in preparation for a possible epidemic, they did not believe t wise to frighten either the public or the profession. They had awards available in the Municipal Hospital to take care of at least 100 cases. If necessary it would be possible to have other general hospitals set aside certain space. He wanted to take this opportunity to thank the pediatrists, neurologists, orthopedists, and all others who had given their time and service in the last few weeks in assistance to the department of health. They had been trying to educate the family to send for the physician promptly when illness occurred among the children. They would pursue in poliomyelitis the same stringent measures observed in cases of smallpox.

The Schick Reaction in Infants.—Drs. Henry L. K. Shaw and William E. Youland of Albany presented this communication. They stated that there was no question of the accuracy of this test in detecting the individual susceptibility and immunity to diphtheria. A review of the results of the Schick test as reported by various observers in cases under one year of age showed a variation of from 0 to 40 per cent, and from one to two years of age the variation was from 15 to 65 per cent. The writers had made an investigation among ninety-five infants under two years of age in two infants' institutions and two hospitals in Albany. In making the tests they used the standard diphtheria toxin diluted so that 1 c.c. contained one-fifth the M. I. D. and 0.1 c.c. of this diluent was used in making the test. The procedure of Park and Zingher of heating one-half of the diluted toxin at 70 degrees C. for three minutes was used for the purpose of control. The reactions were read daily and the final interpretation made on the fourth day. In practically no case did a typical pseudo reaction occur. In some cases the reaction did not appear until the third day, though it appeared more frequently on the second day. In 66 children under one year of age they found 47 per cent positive, while of 29 children between one and two years of age 58.6 per cent were positive. These results were remarkably similar to those of Park and Zingher. From their experience with this group of cases it would seem that when virulent diphtheria bacilli were found in infants having no antitoxin in their tissues, a careful examination for diphtheritic rhinitis should be made, as they had five cases in which, without such examination, it would have been overlooked.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE

Diagnosis and Treatment of Poliomyelitis.—Walter L. Barber (Medical Record, July 22, 1916) declares that prophylaxis is important, the patient should be isolated, all articles which may have become infected should be destroyed, antiseptic spraying of nose and throat should be practiced, and hexamethylamine should be given as a preventive. Actual treatment of the disease comprises a preliminary dose of calomel, an ice bag along the spine, acetphenetidin to control headache, muscular pain and restlessness. Hexamethylamine with benzoic acid may be used in large doses with benefit in the active stage, while strychnine is to be given only after all inflammatory symptoms have subsided, and then in small continued doses. Galvanism and massage with muscle education are later used to restore atrophied muscles.

Epidemic Poliomyelitis: Symptomatology and Diagnosis in the Acute Stages.—Francis R. Fraser (Boston Medical and Surgical Journal, July 20th) gives the following symptomatology of this disease:

1. Preparalytic and General Symptoms.—The parents as a rule state that there was a sudden onset of fever, with drowsiness, general weakness, loss of appetite or vomiting, and perhaps irritability and restlessness, which frequently is ascribed to a mild disturbance of the digestion. Fever is always present at first. The temperature usually is from 101 to 103 degrees F., swinging slightly and gradually subsiding in a few days, but may be 104 degrees or 105 degrees F. at the onset as well as in a few cases before death, and readings of 100 degrees F. for many weeks are not unusual. When the symptoms indicate lesions in the upper part of the central nervous system it may be 103 or 104 degrees F. for three or four days and then end in crisis. The pulse rate follows the temperature. Gastrointestinal disturbances are usually present and may predominate during the first few days. A slight catarrh of the upper air passages, with somewhat reddened tonsils and pharynx is not uncommon, but an acute tonsillitis would suggest another diagnosis. Frequently the first symptom is heaviness and drowsiness, accompanied by irritability when roused which is in striking contrast to the heaviness seen when the patient is left alone. The child is cranky and restless, and frequently there are jerking movements of one, or of several parts, or of the whole body. A diffuse generalized sweating is common in very severe cases, and in the early period before definite paralyses are seen, there is apparently a general weakness of the entire musculature. There is much diffuse pain and tenderness, and pain in the back of the neck and in the back is an important symptom. The patient prefers to lie on one side so that the head may be tilted slightly back, or on his back with a pillow between his shoulders so that the head fals back. Kernig's sign is not present as a rule.

2. Spinal Fluid Symptoms.—The changes in the spinal fluid are not characteristic of this disease alone, but are useful in differentiating the disease. The cells are increased in number and there is an increase of the globulin content. Cell counts of over 1,000 per c. mm. are rare, counts under 100 are more common. During the first few days polymorphonuclear cells and cells with irregular nuclei may be numerous, but after the first week the increase is due almost entirely to cells of the lymphocytic type. The globulin increase is found in one half of the fluids during the first week, and in an increasing proportion to the third week. In the first week nearly all the fluids

show abnormalities in cell count, in globulin content, or in both; in the fourth week about one half are abnormal; then the proportion falls off rapidly. The fluid does not clot, is sterile, and no organisms can be found after it has been centrifugated.

3. Blood.—The blood gives no help, as there is no change in the number of red cells, and the number of white cells is within the limits of normal variations.

4. Disturbances of the Motor System.—Paralysis may involve almost all of the musculature, or be limited to a single group, or a muscle. It may be severe, producing a permanent complete paralysis, or be mild, causing a partial paralysis or a temporary weakness, so that a most thorough examination is necessary, in which every muscle must be tested. Much information as to the condition of the muscles can be gained from an inspection of the attitude of the patients and of the limbs, and by testing the tone of the muscles on passive movements.

5. Disturbances of Reflexes.—As in the case of the paralysis it is the asymmetry of these disturbances that is characteristic. Reflexes may be exaggerated one day and absent the next, may be lost gradually, or they may be exaggerated in one part and absent in another at the same time.

6. Disturbances of the Sensory System.—Pain and hyperesthesia are present, but in little children an accurate examination of sensations is impracticable. If exact methods of estimating muscle power and sensation were available, it is possible that many abortive cases which show none but the preparalytic and general symptoms would show changes, and that many cases of doubtful diagnosis could be cleared up.

7. Diagnosis.—In the preparalytic period and in abortive cases this depends to a great extent on the presence of an epidemic and association with other cases. Under these circumstances a sudden onset of fever, gastrointestinal symptoms, and perhaps pain would demand a careful examination for signs of stiffness of the neck and back. If there is any suspicion of a meningitis, the condition of the spinal fluid will clear the diagnosis in most cases. The differentiation from a gastrointestinal upset is most difficult, but the spinal fluid is normal, diarrhea is more usual than constipation, and vomiting is more persistent. The other common infectous diseases begin similarly, but in them the pain and hyperesthesia is usually absent, the spinal fluid probably is normal, and a rash develops. Acute rickets is easily mistaken, but the spinal fluid is negative, and a pronounced enlargement of the liver is not found in poliomyelitis. The onset is different in tuberculosis of the hip. In acute rheumatic arthritis, the tenderness is confined to the joints, and in poliomyelitis there is no synovial effusion or swelling of the joints. Meningitis due to the meningococcus, pneumococcus, influenza bacillus, streptococcus, and staphylococcus, gives a spinal fluid with cell increase due to polymorphonuclears, and the organism can be found in smears and can be cultivated. In tuberculous meningitis, and in syphilitic meningomyelitis, the spinal fluid is similar to that of poliomyelitis and the clinical findings are not differentiated until the case has been watched for a few days. The finding of tubercle bacilli, evidence of tuberculosis elsewhere in the body, and the absence of paralysis of muscle groups in a very sick child help to differentiate in the one case; the signs of congenital syphilis and the enlargement of the liver and the spleen help in the other. Acute poliomyelitis is probably mistaken for cerebrospinal meningitis more often than for any other disease, but the rash, the photophobia, and the characters of the spinal fluid should differentiate it.

Prevention of Infantile Paralysis.—(Editorial, Nashville Journal M. and S.) To control the present epidemic of infantile paralysis, according to a statement issued by the United States Public Health Service today, the chain of infection between persons harboring germs of the disease and the well members of the community should be broken. Infantile paralysis is probably caused by a very minute organism found in the nasal, mouth and bowel discharges of those who have the disease or who are carriers of the germ without themselves suffering from the ailment. All of the steps in the spread of the infection are not known, but if this germ can be prevented from passing from the infected to the well person, the disease will cease.

Infantile paralysis is not a disease of recent origin. Sporadic or scattered cases have occurred throughout the country for many years, but it is only during the last decade that the infection has assumed epidemic proportions in the United States. The present epidemic in New York City, on account of its magnitude and virulence, has awakened the residents of many communities to the danger of the importation of the disease into their own midst. This danger is real, but if due precautions are exercised it is believed that the epidemic will subside.

The actual control of the present epidemic must be left to the city, State and Federal health authorities. These organizations will properly quarantine and care for affected persons, prescribe sanitary measures and limit as may be necessary the travel of individuals in order to protect neighboring districts from the infection. Individuals and communities, however, can do much toward their own protection.

Poliomyelitis is probably spread directly or indirectly through the medium of infective secretions. Account must, therefore, be taken by communities of every means by which such secretions are disseminated. Promiscuous expectoration should be controlled. The common drinking cup affords a method for the interchange of materials of this nature and should therefore be abolished. Rigid cleanliness of glasses and utensils at soda fountains, in saloons and other public places should be enforced. Flies, roaches and other vermin, by coming in contact with infective secretions, may possibly convey them to our food and thus directly bring about the development of disease. Therefore eliminate insects. Street and house dust bear a definite relation to the spread of many infections and it is not unreasonable to presume that they may be a factor in the dissemination of infantile paralysis. Maintain strict cleanliness of streets, yards and alleys in order to prevent the breeding of insects and other vermin.

See that all garbage and waste are properly cared for and collected at regular and frequent intervals. Guard all food supplies, especially milk and other perishable products. Digestive troubles of children arising from the indigestion of food of questionable quality may lower resistance. Assemblies of children in infected localities are to be discouraged, if not actually forbidden. While the above measures are in a sense general, and applicable to many epidemic diseases, their importance should not be overlooked.

Summon a physician at once and immediately notify the health officer of the presence of the disease. If the disease is present in the community, medical aid should be sought whenever a child is sick, no matter how light the illness; many cases of infantile paralysis begin with a slight indisposition. Should the illness prove to be infantile paralysis, isolate the patient, place a competent person in charge, and reduce all communication with the sick room to a minimum. Hospital care is preferable, not only for the child but in order to better safeguard against the spread of the disease. The sick room should be well ventilated and screened. Nasal and mouth secretions should be received in cloths, placed in a paper bag, and burned. The clothing of the child, the bed linen, and the excretions should be disinfected in the same manner as for typhoid fever, that is by boiling, the long continued application of 5 per cent carbolic, or other well recommended disinfectant. The same is true for dishes and drinking vessels. Nurses should exercise the same precautions as regards cleanliness of hands in caring for infantile paralysis patients as for those afflicted with other infectious diseases.

A child may convey the disease to others even after a lapse of several weeks. For this reason quarantine should be maintained for a considerable period, usually from six to eight weeks, and the above precautions should be adhered to during this time. Disinfection of the room following recovery is advisable.

Scarlatina.—Until a satisfactory serum shall be developed the principal lines of treatment in scarlet fever must be to ward off complications and to support the vital processes. In this endeavor less may be gained by drugs than by the persistent use of simple hygienic measures.

Middle ear complications are best prevented by frequent careful cleansing of the nasopharynx; for this purpose nothing excels normal saline solution rendered alkaline with borate or carbonate of sodium; the addition of traces of menthol or eucalyptus may be of some inhibitory value through a slight antiseptic effect, but simple home made solutions are fully as satisfactory as the various expensive ones on the market. Keeping the nasopharyngeal mucosa well cleansed is the best way of preventing extension of the inflammatory process into the Eustachian passages.

In controlling the fever great care must be exercised, inasmuch as cool applications may easily interfere with the normal development of the eruption. Bathing to reduce fever should be with water only a few degrees lower than the existing body temperature, and the process should be conducted in a room sufficiently warm to admit of no sense of chilliness to the patient. But for treatment of the nervous symptoms cooler applications, by means of the cold coil or even the ice bag, may be made to the head. Frequent bathing for purposes of cleanliness is also desirable to further skin activity in toxin elimination. The older idea of frequent inunctions to prevent dissemination of the desquamata may well be discarded as not conducive to cleanliness. The exfoliated scales are adequately removed in the bath, while evidence of the contagiousness of the scales is lacking, the theory of such means of propagation having been largely abandoned by modern investigators.

The use of some of the coal tar series for antipyresis may be mentioned to be condemned. There is ever present in scarlet fever a tendency to cardiac complications, and we can ill afford to increase it by giving any drug which has a direct toxic effect on the heart.

The tendency to irritation nephritis is best cambatted by frequent stimulation of the eliminative function of the skin, by washing of the blood stream, by complete rest in bed, and by limitation of the diet to simple nourishing liquids. The skin is capable of rendering much assistance to the kidneys, and this potentiality should be fully utilized. Hot air, dry or moist, will accelerate perspiration; at the same time, copious hot drinks must be taken, or resort made to full saline enemata, as it is essential that the specific gravity of the blood be not raised but rather lowered. The diet must be reduced to the minimum for present metabolic efficiency, and administered in a form calling for the least amount of digestive effort.

In robust children, in whom there is an unduly marked reaction of the heart, as shown by high pressure tension and by excessive rapidity of the pulse, the heart may be advantageously brought temporarily under aconite control, great care being taken that there is used only the minimum amount required to obtain the desired effect and that the ensuing reaction is carefully kept under observation. Powerful drugs should always be administered well diluted, and diligent discretion should be exercised.

In later stages of severe attacks, cardiac feebleness develops not infrequently; this may be treated symptomatically with caffeine for the sake of its stimulating effect on the heart, and with strychnine for its heightening of the sensory reflexes of the cord; but the physician must strive energetically at the same time to eliminate the causative toxemia.

Postscarlatinal anemia may require prolonged treatment with iron, in which case the old fashioned carbonate or the newer citrate constitutes the best preparations.—A. D. Bush in N. Y. Med. Journal.

Treatment of Septicemia.—Lorrain Smith and Ritchie (West London Medical Journal, July, 1916) report two cases treated by intravenous injections of eusol. Eusol is the name given to an aqueous solution of 0.5 per cent strength of free hypochlorus acid, prepared by shaking twenty-five grams of a mixture of equal parts of chloride of lime and boric acid in a litre of water and then filtering. For intravenous injection, 8.5 grams of salt are added; 100 c. c. were administered in one case and 120 c. c. were administered in the other. The results were favorable, the temperature in one case falling from 160 degrees to 96 degrees in twelve hours.

Treatment of Cancer of the Uterus.—Donald C. Balfour (Texas State Journal of Medicine, July, 1916) advises early cauterization in early cancer of the uterus, followed immediately by a total abdominal hysterectomy. In a small percentage of the cases the condition of the patient may demand a vaginal hysterectomy as the wisest procedure. For moderately advanced cases the use of heat by the Percy method is best. From the results of this treatment the surgeon must decide whether a total abdominal hysterectomy is advisable and, if so, when. If the patient is a serious operative risk, vaginal hysterectomy should be considered. In advanced cases a determined effort should be made to ameliorate the symptoms and prolong life by heat, radium, etc. This treatment, at times, is rewarded by a result which permits radical operation.

Clinical Results with the Tungsten Lamp.—A. B. Cottell (Brit. Med. Jour., July 29, 1916) reports that sinuses and indolent ulcers caused by frostbite, and other forms of resistant lesions have invariably responded favorably to treatment by the tungsten lamp. They have healed much more rapidly than under other methods of treatment, and the scar left was soft and closely resembled the normal skin. Lupus and other forms of tuberculous ulceration also healed quickly and with soft scars. The same was true of a phagedenic ulcer. Other conditions were also benefitted, such as asthma and some forms of stiff joints. The first exposure to the light should be for only one minute, which can be increased later to from two to five minutes, depending upon the local reaction. No subsequent exposure should be given until the reaction from the previous one has passed off. The eyes of both patient and operator must be shielded from the rays.

Treatment of Simple Prurigo.—P. G. Unna (Berlin. klin Woch, Feb. 14, 1916) reports that ichthyol acts both as a symptomatic remedy for the swelling, and as an etiological remedy against the causal infection. The most rapid results may be secured by first rubbing the affected area with sandpaper, and by following this with an application of an antipruritic and antiparastic powder containing ten per cent of paradichlorbenzol. This causes some temporary burning, but when this passes off the itching will have been relieved. Then a varnish containing ten per cent of ichthyol in gelanth should be applied. (Gelanth is a water soluble varnish made from gelatin and tragacanth.) In obstinate and recurrent cases the addition of one or two per cent of chrysarobin to the ichthyol varnish is very helpful, and the application of this should be preceded by a lathering of the parts with ichthyol soap.

Acidosis in Children.—J. M. Grantham (Jour. Florida Med. Ass., July, 1916) considers that the alimentary tract should be thoroughly emptied by a dose of castor oil or by repeated doses of one-tenth of a grain of calomel until evacuation. The colon should also be irrigated. During the first day the food should be a seven per cent solution of milk sugar and later a one per cent barley water, to which milk sugar is added. If nausea or vomiting prevents the taking of food by mouth a five per cent glucose solution may be given by rectum. Medicinal treatment consists in the administration of alkalies until the urine has become decidedly alkaline in reaction. For this purpose a saturated solution of sodium bicarbonate is the best, and of this a tablespoonful in some ice water may be the initial dose, to be repeated hourly day and night with an increase in the dose if the patient will stand it. In very severe cases one or two drams of a four per cent sodium bicarbonate solution may be given intravenously and repeated as required.

Treatment of Carriers of Amebic Dysentery.—H. H. Dale (Lancet, July 29, 1916) describes a number of cases in which a course of the usual hypodermic emetine therapy produces only a temporary disappearance of cysts from the stools. Such cases relapse into chronic syst carriers. The use of ipecacuanha by mouth seems to have given better results in this class of cases, but it is often impossible to give a thorough course of treatment in this way, owing to the production of nausea and vomiting. A double iodide of emetine and bismuth has been prepared recently and furnishes a salt from which the emetine is liberated only after passage into the alkaline intestinal fluids. Three grains of this salt represent one grain of emetine and are equivalent to sixty grains of ipecac. This preparation was tried by Dale in a small series of chronic carriers with strikingly favorable results. In the majority the cysts were promptly and permanently removed from the stools. In a few of the patients some nausea was observed, but this could often be prevented by administering the dose with, or immediately after a meal. The daily dose ranged from two to four grains administered in capsules. It is suggested that this new preparation might be employed in small doses repeated every few days as a prophylactic for those exposed to infection.

Some Early Symptoms Suggestive of Protein Sensitization in Infancy.—Dr. Oscar M. Schloss, of New York, had made a large number of skin tests in infants with inconclusive results, in chronic nutritional disorders. He stated that sensitization from the absorption of unaltered foreign protein had not been proved to occur regularly in human beings, as in animals. He thought that the idiosyncrasy of some infants to foods that they had never before ingested might be explained by inheritance. In four cases of asthma that had a definite relation to food, he had accomplished desensitization with good results.

Dr. Fritz B. Talbot, of Boston, believes the condition of anaphylaxis giving rise to symptoms of asthma to be a relatively rare one. In looking through the hospital records, he had found very few such cases that might have been of anaphylactic origin, but had found more among the skin cases. Of the respiratory symptoms, he thought that wheezing, when there were no rales in the chest, with no fever and nothing else to explain it, might be of anaphylactic origin. Croup might also be in a few instances, and likewise some digestive disorders, he said.—New York Medical Journal.

Early Morning Vomiting in Children.—Dr. Thomas S. Southworth, of New York, directs attention to the vomiting of children, which not infrequently occurs in the early morning, either before or soon after the first feeding. This he believes to be of toxic origin, since the vomitus after the long night period contained no food residue unless a morning feeding had been given. It was sharply distinguished, he said, from the vomiting of undigested and fermenting food from failure of gastric digestion, which usually occurred later in the day. The cases, one of which was related as typical, had neither the characteristic histories nor clinical symptoms and course of recurrent vomiting, which was another toxic type. He believes that in the recurrent type the toxemia was probably of gradual and cumulative evolution brought to a head by constipation or some unusual factor. Elimination, he states, was slow and vomiting prolonged. Fever was not constant. In the type under consideration with early morning vomiting fever was a usual accompaniment, often rising sharply, and there was an acute putrefactive process in the intestine with absorption and attempted reelimination by the gastric mucous membrane. He assumes that this toxic material accumulates in the stomach during the hours of slumber when reflexes are more or less deadened and asserts its presence in vomiting after awakening. Purgation results in foul stools often containing mucus. After the stomach was emptied by one or two acts of emesis at short intervals there is not the same tendency to recur which pertained to the recurrent type. He believes that the extreme caution in the resumption of feeding often displayed after attacks of recurrent vomiting frequently leads to undernutrition in children whose attacks occurred at rather short intervals, and says that slightly greater care is demanded in the acute toxic type of intestinal origin, expecially in the summer months, because of the intestinal condition. With care, however, he thought that reasonable feeding might promptly be inaugurated. The author believed early morning vomiting without food residue from the previous day to be a sign of value as indicating an acute toxemia arising in the intestinal tract.—New York Medical Journal.

Care and Feeding During the First Month.—Dr. Godfrey R. Pisek said that it would be generally conceded that the first month of the infant's life was the most important one from the standpoint of care and feeding. The latest mortality statistics for the first month of life in greater New York showed that during the first eleven weeks of 1916 fifty per cent of the deaths occurred in the first month of life, which high mortality could be lowered by active measures of prevention and correction. Attention was called to certain basic principles underlying the feeding of infants in the first month of life which, if transgressed, were apt to bring trouble or even disaster.

The attitude of pediatrists had changed considerably in the last five years in regard to the feeding of infants, but there was a unanimity of opinion that breast milk was the infant's birthright which it should not be denied. But in spite of this and of the fact that eighty-five per cent of infantile deaths were among those artificially fed, they were still being removed from the mother's breast for insufficient reasons by the physicians or nurse. In many cases insufficient breast milk could be supplemented by one or two bottles of artificial food a day. In this way the supply could be kept up, at the same time allowing a period of freedom for the mother. In his case book the records showed that thirty per cent of the children in his care were receiving mother's milk only, 48.8 per cent were on the bottle and the breast, and 22.5 per cent were receiving the bottle exclusively. Blameworthy were those who removed the baby from the breast, not because of the accepted contraindications for nursing, but basing their decision on the fact that no milk had appeared in forty-eight or seventy-two hours, or on one hasty and inaccurate examination of the milk, or because there was some vomiting after nursing, or because of an occasional abnormal stool, or because the mother or attendants thought the breast milk did not agree.

Every effort should be made to have the baby receive breast milk alone, or at least part breast milk, during the first month of life. Even a small amount of breast milk aided in the digestion of cow's milk. Complete emptying of the breasts was the best method of assuring a good supply, and yet this simple means was frequently overlooked. If artificial food was necessary, it should be low in fats and proteins, but high in sugar, until after it was certain that the infant had adapted itself to cow's milk, when the strength in the other elements could be increased. Mixed feeding should not be introduced in the first month if at all avoidable, as greater resistance was secured after a month or two on the breast alone. If it had been satisfactorily determined that the amount of secretion was constantly deficient, then a bottle feeding should follow each nursing period. The care of the pathological newborn would extend to beyond the limits of the allotted time, and any unsuccessful attempts at artificial feeding should be at once discontinued and the help of a wetnurse secured.

Should circumstances demand that the baby be artificially fed during its first weeks of life, the physician should realize that this was the most sensitive and precarious period in the baby's existence and that one mistake might endanger the child's life, whether this was in the food itself, in the mixture, or in its preparation. Simplicity in feeding was rapidly gaining ground, and if they kept in mind the caloric needs, the protein needs, and at the same time adapted the food to the digestive capacity of the particular infant, success was quite assured. The caloric requirements were not to be fulfilled until the end of the second week. Boiling the milk in the first weeks was often necessary to prevent the formation of tough curds. A gain in weight could be expected only when the food was given in utilizable form and in such quantity that the caloric needs (100 to 120 calories to the kgm. of body weight) had been supplied. The amount of food allowed depended on the period selected and should be calculated on a twenty-four hour basis.

At no time was it so necessary to inculcate regularity of habits and to abide by the laws of hygiene as in the first month of the baby's life, and obstetrician and pediatrist should join hands, for on them devolved in a large measure the responsibility of reducing mortality among the newborn.—New York Medical Journal.

Syphilis in Mother and Infant.—Dr. J. R. Losee said that there were many theories on the transmission of syphilis from the parents to the offspring, but for the present it was necessary to reason from the history and clinical findings. Many men who had had syphilis and who were very thoroughly or only partially treated, married and had healthy children; on the other hand, the wives of men under the same conditions of treatment and in apparent good health, gave birth to macerated fetuses and syphilitic children. There was no definite means by which a parent, subject to latent syphilis, could be assured that all his children would be born free from manifestations of the disease. The paternal theory, that the spermatic fluid affected the ovum which went on to the development of a fetus which in turn affected the mother, seemed hardly possible. There was no doubt that several cases of pure spermatic infection had occurred, as many women were affected after marriage. The maternal theory, in which the mother was affected primarily and the fetus secondarily, was quite probable and easy to explain. The fact that a patient denied symptoms of primary or secondary syphilis, when questioned after being delivered of a macerated fetus, and had a positive Wassermann reaction, did not prove that they were not present some time before or during pregnancy. As most of the stillbirths from syphilis took place in the latter months of pregnancy, it was fair to assume that the fetus was infected from the mother through the placenta, but whether the placenta could transmit spirochetes without showing pathological evidence was an unanswered question, so that they might draw some relation between the nonsyphilitic children of syphilitic parents and the normal placenta.

A consideration of the effect of syphilis on the offspring included both the transmission of the infection in its active form, in which the fetus either died in utero, or was alive and showed symptoms during the first year, and the transmission of the latent form of the disease, in which the child was normal in every respect at birth and during the first year, but acquired typical syphilitic lesions later in life. Comparatively few infants born of syphilitic parents went through life without at some time presenting symptoms of the disease. Maternal syphilis had always been considered to play a considerable part in the etioligy of abortions, macerated fetuses, premature births, and stillbirths, but it was fair to assume that the same etiological factors were present which had been said to cause abortions in nonspecific women. Intrauterine death of the fetus from the sixth month to term had long been known to be due in most instances to syphilis, and thirty-five to forty per cent of stillborn children were due to syphilis.—New York Medical Journal.

Vagotonus and Sympathicotonus in Scarlet Fever in Children.—W. I. Moltchanow and D. D. Lebedeff (Roussky Vratch, May 14, 1916) discuss the latest teachings regarding the two divisions of the nervous system—the somatic and the vegetative, the latter comprising the sympathetic and the so-called autonomous nerves. Each organ supplied by the vegetative nerves receives sympathetic as well as autonomus fibres. Functionally, these groups of nerve impulses are characterized by their antagonism. Thus, if one group carries impulses which excite activity, the other transmits inhibitory impulses. For instance, in the eye the autonomous oculomotor nerve contracts the pupil while the sympathetic dilates it. In the heart the autonomous vagus slows the heart's action, while the sympathetic nerve increases it. In the stomach and intestines the vagus increases peristalsis, while the sympathetic inhibits it. The different behaviour of these nerves can be demonstrated by the action of certain drugs. Thus adrenaline excites the sympathetic nerves, having no action on the autonomous. Pilocarpine, on the other hand, has no effect on the sympathetic system, but excites the autonomous nerves. Atropine paralyses the same fibres of the autonomous system as are excited by pilocarpine. As these nerves have to do with internal secretions and metabolism, their study in acute infections is of considerable interest. This can be accomplished by the pharmacological tests devised by Eppinger and Hess. The author applied the tests to ten children, varying in age from six to twelve years, during the second and third weeks of scarlet fever. The following method was employed: Twenty-four hours before the test, the patient was given fifty to 100 grams of glucose on an empty stomach, in the morning, and each portion of urine voided during the twenty-four hours was tested for the presence of sugar. If no sugar appeared an equal amount of glucose was given on the following morning, and one to one and a half hour later from 0.7 to 1 c. c. of adrenaline, 1 to 1000, administered subcutaneously in fifteen to twenty c. c. of normal salt solution. In one to three days later the pilocarpine test was applied by administering subcutaneously from 0.004 to 0.01 gram of pilocarpine. A few days later atropine was injected in doses of 0.0004 to 0.001 gram, according to age. The blood pressure and pulse were determined before and after each experiment. The effect of adrenaline was determined by the appearance of glycosuria, redness of the skin, and the state of the pupils. The pilocarpine and atropine reactions, by the salivation, perspiration, and lacrymation. In some cases Aschner's sign was looked for, namely, decrease of pulse rate on pressure on eyeball. Analysis of the results obtained by the authors shows that only one of the eight patients who received adrenaline showed a slight glycosuria. Three did not react at all, while the others showed either a rise in blood pressure or increased pulse rate, or both. All ten reacted to pilocarpine in varying degrees. All reacted to atropine although not to the same extent. These results show that if there is an increased tonus in one division of the vegetative system there is a lowered tonus in the other. In eight of the patients a vagotonus was observed, and in one a balance of both systems. Applying these results to conditions found in scarlet fever, the authors conclude that the cardiovascular disturbances and eosinophilia are due to a vagotonus. The white dermographism which they observed in all cases they attribute to local changes in the vessel walls and the inflammatory process in the skin.—N. Y. Med. Jour.

The Need and Value of Systematic Prenatal Care.—Dr. Ralph Waldo Lobenstine declared that in no field of preventive medicine was there to be found a greater opportunity for accomplishing such far reaching results as in prenatal care, which, to be of real value, must be systematic, intelligent, and untiring, and must begin with the perfect understanding and co-operation of the expectant mother.

There was a terrible lack of real oversight of the parturient in the city of New York, largely due to the failure to apprehend the consequences of neglect. Prenatal care prevented, or at least lessened, the frequency of many of the serious complications of pregnancy and many unnecessary maternal deaths; it better prepared the mother for labor and lessened invalidism and, finally, it had a deep influence upon the welfare of the infant. It was truthfully stated that ninety per cent of American women were without proper prenatal care; in consequence, the loss of infant life was very high during pregnancy, labor, and the early post partum weeks, while between 15,000 and 20,000 women lost their lives annually from causes directly or indirectly attributable to child bearing.

Health statistics were particularly difficult to deal with in this country because of the incomplete registration area; in the registered areas there were to be found fairly accurate mortality statistics, but the birth records were still incomplete and the stillbirth records far from trustworthy. Improvement in the statistics of stillbirths would be favored by the adoption of some such law as the English Notification Birth Act, which would further the development of better medical prenatal supervision. If these statistics were accurate and available, many lessons would be learned to the betterment of the human race.

About 80,000 infants died in utero from antenatal causes, and to this number must be added the great number of spontaneous abortions, of which there were no records and which were more or less dependent on the same causative factors. In New York city alone there were reported to the department of health in 1915, 6,419 stillbirths and 5,062 deaths under the age of one month. These early deaths were dependent on the same causes that were responsible for the introuterine death of the fetus. All too often the child was physiologically unfit to maintain an independent existence. Both intrapartum and intrauterine mortality could be greatly reduced by proper measures.

The more common antenatal causes were syphilis, alcohol, renal and cardiac disease, sexual excess, deficiency in food supply of the mother, subnormal state of father or mother at time of conception, fatigue, and bad physical environment during pregnancy. The less tangible antenatal factors were gonorrhea, heavy use of tobacco and opiates, and the complex toxemias of pregnancy, the lower grades of which received far too little attention from the obstetric attendant, as they were often responsible for conditions of malnutrition, acidosis, and probably hemorrhagic disease in the infant. The evil effects of overfatigue, particularly when repeated, were well known.

The ultimate blame for the present high mortality in both mother and child was to be attributed to the following conditions: Ignorance or indifference on the part of a large section of the community in matters concerning parturition, poverty, insufficient obstetric training of the general practitioner, the midwife question, and lack of adequate prenatal care. The remedy was to be found in publicity without exaggeration, general improvement in social conditions, elimination of the midwife, adequate, practical, and safer medical attention, greater hospital facilities, and more adequate home nursing. The system of training, almost universally prevalent in this country, afforded the average doctor a scandalously small amount of practical obstetrical experience, either before or after graduation. The general practitioner who by choice or by fate engaged in confinement work among the very poor, was deserving of the deepest sympathy.

Every woman should find it possible to obtain regular, systematic prenatal care during the greater part of her pregnancy, these should be more clinics really doing prenatal work in fact and not only in name, and there should be closer co-operation of all the various agencies engaged in welfare work, and particularly an ever increasing widening throughout the country of the work of the visiting nurses, which was admirable, although the scope of their activities was not yet fully appreciated. The best solution of the question of prenatal care of the poor parturient woman might prove to be some form of industrial insurance. When the need and value of systematic prenatal care were more fully understood, the mortality statistics would be lowered, the home would become a better place, and the standard of community life would be advanced.—New York Medical Journal.

Accidents and Disease of the Early Weeks.—Dr. L. E. LaFetra said that injuries to the infant, as the result of prolonged labor, difficult forceps extraction, or abnormal presentations, might be grouped as affecting the head, the neck, and the extremities. Serious injuries to the head were those that resulted in intracranial hemorrhage. The loss of the sucking reflex was a most important sign of serious brain lesion. The commonest result after recovery from brain hemorrhage was spastic paralysis of one side of the body or of both lower extremities, and when more than two extremities were involved there was nearly always mental impairment. Immediate operation should be done if the hemorrhage could be localized.

Of the diseases and disorders to which the newborn infant was subject, among the congenital defects the most important was the heart disease. Congenital hypertrophic stenosis of the pylorus was also important. Spina bifida, with or without meningocele, added gravely to the prognosis in proportion to its size and the accompanying conditions. Cleft palate and hare lip added to the difficulty not only of feeding but of keeping the mouth clean and of preventing respiratory complications. Another defect was club foot. Constitutional disease was shown in hereditary syphilis and also by sclerema, general debility, chondrodystrophy and mongolism. Cretinism was not evident during the early weeks.

Among the acquired diseases, most important in the early days were acute infections. These included gonococcus opthalmia and vaginitis, though the former could be entirely prevented if physicians were careful about instilling nitrate of silver. Erysipelas was not frequent, but was peculiarly fatal to young babies. Tetanus was formidable, but much less so since its antitoxin was used intraspinously. Of recent years sepsis in the newborn had become an important chapter of the increasing knowledge of infantile diseases. If might be caused by a great variety of germs such as the pyogenic cocci, the diplococcus of pneumonia, the colon bacillus, bacillus pyocyaneus, the influenza bacillus, and the bacillus of Friedlander. In rare instances the infant was born septic, or became infected through aspiration of infected liquor amnii. The umbilical cord was the most frequent entrance port for sepsis, and next in frequency was the skin. The mucous membrane of the gastrointestinal tract was frequently the port of entrance. Because of the undeveloped condition of the skin and mucous membrane, the newly born were exceedingly susceptible to septic infection, and the younger the child the less the resistance so that the premature infant was most easily attacked. Breast fed children were attacked less often than those artificially fed and this was explained on the basis of the transmission to the baby of alexins through the mother's milk. In the treatment of sepsis, prophylactic measures were the best. After the condition had arisen, in addition to proper feeding, airing, and nursing, all the avenues of elimination should be encouraged. The most promising treatment was either transfusion, or the injection of normal blood or serum.

In the treatment of pyloric stenosis a careful trial of dietetic and medicinal measures should be made before deciding upon operation. The important points for deciding to operate were progressive loss in weight, lack of food residue in the stools, and prolonged retention of food in the stomach. Among the surgical procedures, the Rammstedt operation of partial pyloroplasty was probably the best. It should be emphasized that the after care of operations was exceedingly important.—New York Medical Journal.

BOOK REVIEWS

Gould and Pyle's Encyclopedia of Medicine and Surgery, with particular reference to Diagnosis and Treatment. Third edition. Revised and enlarged, by R. J. E. Scott, M.A., B.C.L., M.D., New York. With six hundred and fifty-three illustrations. Price, $12.00 net. Philadelphia, P. Blakiston's Son & Co. 1916.

It is customary with many reviewers when they are about to discuss a work of an all embracing character, or which covers a wide field, to refer to it as monumental. Such a reference is more or less applicable and suitable to the work before us. While it is perhaps not quite all embracing with regard to medicine and surgery, it assuredly covers a wide field and is, at least, monumental in the sense that it is a monument to the painstaking perseverance of its editor in putting into order the mass of information contained therein and to the knowledge of the contributors thereto. The list of contributors comprise the names of most of those eminent in medicine and surgery in this country, and in consequence the information afforded, renders the work of the greatest practical value as a book of reference to medical practitioners and students of medicine.

That it has gone through two editions in a short time, in fact, the last edition was only published three years ago, is sufficient evidence of the esteem in which it is held by members of the medical profession. Of course, a work of this kind needs somewhat frequent revision, for new views, discoveries, innovations and improvements are always cropping up or being introduced into the field of medicine and surgery. Especially has this been the case during the past few years, when the European war has to some extent revolutionized the practice of certain branches of surgery. The revision of this edition seems to have been fairly thorough. Several new articles have been added, although it may be remarked that scarcely so much advantage has been taken of the knowledge already gained in surgical procedures and in the treatment of wounds at the war front, which might have been taken. Little comment is made on the various methods of combating sepsis employed by European army surgeons. Indeed, the wounds of war are hardly referred to, trench foot is not even mentioned. However, the editor may have deemed it advisable not to enter into these matters until more definite conclusions have been reached, especially as regards the relative value of antiseptic and aseptic methods of treating wounds. Poliomyelitis is referred to in a very cursory manner, but here again the editor may have thought it wise not to attempt to discuss at any length a disease concerning which so little is really known, and particularly of its diagnosis and treatment. On the whole, the work is valuable as a book of reference and may be highly commended as such.

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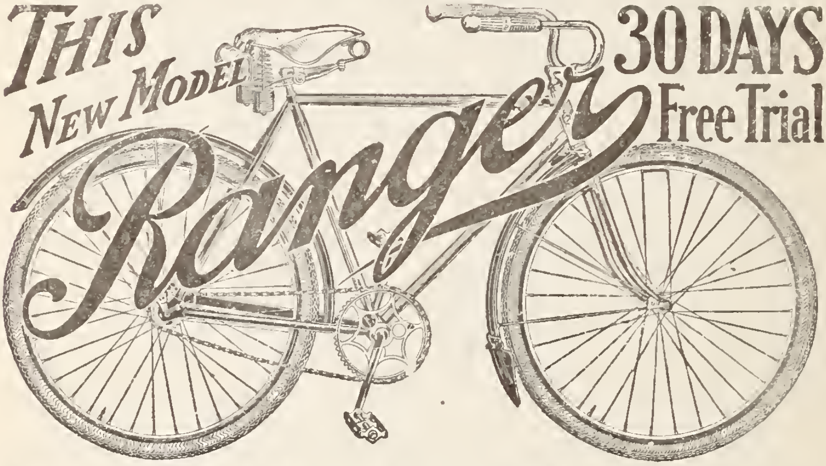

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EDITORIAL

THE REACTION OF THE CHILD TO A FAULTY ENVIRONMENT

It is obvious that in the rearing of a child very much depends on environment. From the moral and mental standpoint, environment is of greater importance than heredity and from the physical point of view environment is equally important. If the surroundings of the child are not hygienic and if it be not fed properly, it will be probably a failure physically. Dr. Hector Charles Cameron has written a series of papers in the Practitioner dealing with the child and environment and in the paper published in that journal in October, points out that it is in early infancy that the part played by faulty environment is most striking. Efficient ventilation, cleanliness, and the provision of warm but porous clothing, equally distributed over the child's body are essential, if infection is to be avoided. The danger of contact infections should be explained to the mother and nurse. The baby should be kept out of rooms crowded with adults and kissing and close contact of face with face should be avoided. Faults of hygiene, which are relatively harmless for adults, are of the most serious import for young children, and in every case of unexplained continued ill health in an infant, the whole environment must be explored with a view to their detection. But after all, diet is the phase of environment which bulks most largely in the upbringing of the child. If a child be not properly fed, it is not adequately nourished or may be even poisoned. The infant should be fed on the breast during the early months of life, and the reasons for following this rule should be strong indeed for deviating from it. It must be always borne in mind there is an element in human milk which it is impossible to substitute. Probably this element is the vitamine element. However carefully and scientifically, then, cow's milk may be modified, there is always something lacking which renders it less nourishing than mother's milk, and it is not only a potent factor in the causation of scurvy, but also plays a prominent role in the production of rickets. According to Cameron, the catarrhal state and the status lymphaticæ seem to belong, like rickets, to a group of disorders which may be called "domestication diseases," the reaction of tame, not of wild animals to their particular environment. But while rickets is benefitted by a change of air, and by living largely in the open air, it is essentially a malady of diet, and those who hold that it is due to a lack or absence of vitamines in the food can find a good deal of support for their point of view. The care of the young child after being weaned is of the utmost importance and it is at this time that the advice of the physician should be sought with regard to diet and environment.

FREQUENCY OF HEREDITARY SYPHILIS

The frequency of hereditary syphilis is a matter concerning which there has been a great deal of discussion but no general agreement. Of course, it is obvious that to trace accurately the frequency of any hereditary disease is by no means an easy task, and the reliability of such figures is dependent on many factors. According to Drs. Frank Spooner Churchill and Richard S. Austin, who wrote on the subject in the American Journal of Diseases of Children for October, their statistics have been obtained by accurate diagnosis rendered possible by careful methods of investigation, both clinical and laboratory; the clinical including an inquiry into the family and personal history of the individual and the practice of making a physical examination; the laboratory including the usual routine tests and, in addition, any methods specially applicable to the subject under discussion.

In accordance with this general plan, the writers have made an inquiry as to the incidence of hereditary syphilis drawing their final conclusions from an analysis of the literature and an intensive stuly on their own part of 695 patients at the Children's Memorial Hospital, Chicago.

Their conclusions are as follows: Statistics as to the frequency of any given disease must be based on large numbers of patients, carefully and accurately studied as to diagnosis. The diagnosis must be made after judicious weighing of all the evidence both clinical and laboratory. Study of the literature on the incidence of hereditary syphilis shows a wide range of results, it being variously estimated at from 2 to 14 per cent in Europe and America. Intensive study of a group of 695 patients in the Children's Memorial Hospital, during the winter of 1915-1916, the study embracing both clinical and laboratory methods of investigation, shows an incidence of 3.3 per cent of hereditary syphilis. The amount of hereditary syphilis among the hospital infants and children in four large cities of the United States, New York, St. Louis, San Francisco and Chicago, appears to range from 2 to 6 per cent.

The difficulty of obtaining even approximately exact figurse with regard to the prevalence of hereditary syphilis is exemplified by the estimates quoted by the writers; 2 to 14 per cent in Europe and America. As said before, however, while it is manifestly impossible to arrive at absolutely accurate statistics with respect to this point, the methods employed by the Chicago authorities are the only ones by which the truth can be reached with any degree of precision. Therefore the results of the investigations of Drs. Churchill and Austin may be taken, at least, as fairly accurate and are thus of very considerable value.

THE MENACE OF INHERITED DEFECTS

It is said, and it is doubtless true, that it is the right of every child to be well born, that is to enter into the battle not handicapped by any congenital defects of either body or mind. The Declaration of Independence states that all men are born equal, which is not a fact now, nor never was. While it may be the right of every child to enter into life well born, it is a right that is frequently not attained. In fact, it is largely an ideal, a Utopian view. Therefore, it is plain that all men are not born equal either as regards physical or mental capacities or with respect to the opportunities afforded to turn whatever faculties they may possess to account.

Although men are not born equal and although many come into the world afflicted with some serious taint, this is not to say that every endeavor should not be made to improve the state of affairs in this direction. Perhaps, radical laws to improve the human breed will be some time in coming, but already the menace to the race of the breeding of the palpably unfit is recognized by the medical profession in all parts of the world. According to statistics mental defectives are apparently increasing more rapidly than the general population. Such persons should not be allowed to reproduce their species. Undoubtedly the nation would be the better with half or a third of the present birth rate., if the better half of the children now born could be selected. However, our ideals of personal liberty are incompatible with the restrictions which it would be for the good of the race to impose on many persons who are at the present time allowed to bring children into the world. However, there is one step in the right direction which most assuredly should be taken and that is to use the most stringent measures to stamp out venereal diseases. The efforts so far with this object in view have been but half hearted. A certain prudery seems to hold the hand when dealing with this disease. If stern measures were to be enforced to render the inroads of venereal disease less harmful the quality of the infants born would quickly improve. Venereal disease is the chief cause of mental and physical degeneration and if this menace to the race is to be stopped or even curbed really effective methods must be employed.

A STORY OF FIFTY YEARS ACHIEVEMENT

Fifty years ago the house of Parke, Davis & Co. was born in a drug store. This year the managers are celebrating the golden jubilee, and in honor of the occasion they have issued a handsome booklet which gives a brief history of the early struggles and later attainments of this well known drug house. The book is interesting from the first page to the last, and it is also expressive of the character of the business. It contains a well-written, modest, straightforward statement of difficulties encountered and overcome which should inspire courage in the heart of any struggling man or firm. The book is profusely illustrated with interesting pictures of the leaders of the past, directors and officers of today; the laboratory in Hounslow, England, and the Canadian Laboratory in Walkerville, Ontario; the headquarters' executive staff; buildings and scenes of Parkdale Farm, where the animals are kept for the production of antitoxic serums; the research laboratory; the American branch houses and their managers, some of the foreign managers and the foreign branches.

By contrast the most interesting pictures are those of the house where the business was born in 1866 and that occupied by it today. It is rather hard to believe that from such a tiny acorn so large an oak has grown, but it is true and today its branches (including a dozen or so in the United States) spread to nearly every part of the civilized globe.

Upon a careful study of the faces of the leaders in the past and of the present directors, officers and executive staff, one comes to understand this phenomenal growth. The firm of Parke, Davis & Co. has prospered because it has strong, forceful, capable men behind it; men who expressed their own characters through the quality of the products they manufactured, and who by their honest dealings with their patrons have inspired not only the respect but the love and confidence of those they serve. Today they have no superiors and few equals They are worthy of a whole dictionary of encomiums, for they have been real world benefactors.

BABY EXPLAINS

We were riding on the flyer—all the family going South
I was feeling very comfy—pacifier in my mouth
A doctor man in front of us asked the privilege to inquire
If mother thought 'twas good for me to use a Pacifier?

And then the doctor 'spained to her (as we were going South)
How it would surely spoil my teeth and the contour of my mouth
And then he said an awful thing, how sometimes it would make
Cankers in the 'saffigus and cause a stomach ache.

When I get big and see a child who has a pacifier
I'll hunt the mother up and do my duty by her
I'll tell her all 'bout contour, and spoiling baby's mouth
And all the things the doctor said, when we were going South.

But how many babies' mothers I can never see
Can't some one help me and tell them how careful they should be?
Wish every child who sucks his thumb, or has a pacifier,
Could meet a nice, good doctor-man, like I did on the Flyer.

PEDIATRICS

ORIGINAL ARTICLES

INFANT WELFARE WORK: ITS NECESSITY —ITS REWARD*

BY J. H. MASON KNOX, JR., M.D.
Associate in Clinical Pediatrics, the Johns Hopkins University

The activities of this week devoted to the welfare of the baby and young child, and which have been duplicated in many cities throughout the land, bring us additional proof, if such were needed, that the baby has at last "come to its own." This tiny unit in society, which from time immemorial has been the pride of its own mother and the recipient of much well-meaning advice from her mother and all the latter's friends, now takes its place as the most important potential member of society.

A Federal bureau has been organized in Washington to look after its interests, and many volunteer organizations devoted to various philanthropic and social projects are giving to the baby a large part, and in some cases all of their energies. We can start, then, with the thesis that it is of the utmost importance in this country of ours, if it is to survive and thrive in the future, to have many well babies born and to keep them well.

Though accurate statistics are notoriously lacking, it is thought that there is an infant population under one year of age in the United States of about 2,000,000 and an infant death rate for the same age period of about 150 per thousand, making a total of 300,000 infant deaths, nearly double the number who die from tuberculosis in all ages. The mere statement of these facts brings us at once face to face with the greatest health problem with which this country has to do. When we realize that the infant death rate in this country varies from 250 per thousand to less than 70, and throughout the world from between 40 and 500 per thousand in China to less than 40 in New Zealand, it is perfectly evident that the infant mortality rate is largely dependent upon conditions which can be controlled, at least in part, and that a large measure of responsibility attaches to any community whose baby death rate is unduly large. The death rate, in other words, is a purchasable commodity. It can be reduced to a minimum if the public is willing to pay the price. We must remember also that in the large majority of cases in which a forlorn and marantic baby is brought through its critical first year by proper care that the outlook for that baby is almost as good as that of any other; that its life expectancy is practically as long as that of a child who has been robust from birth, so that in the work of saving babies there is a greater incentive and a larger reward than is given to those engaged in other lines of preventive medicine. Without attempting in any sense to be accurate, we can divide these 300,000 infant deaths into four large groups:

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*Summary of address made during Child's Welfare Week, March 9, 1916, Medical and Chirurgical Faculty Building.—Maryland Medical Journal.

Those that die from—

(a) Congenital debility, usually in the first weeks of life, about 75,000.

(b) Gastro intestinal disorders, about 100,000.

(c) Pulmonary disorders, about 75,000.

(d) Various infections and other causes, about 50,000.

In Baltimore last year there were 16,355 infant deaths, the smallest number for many years.

Unquestionably, this national death rate could be cut in half if all the babies of the country were given even moderately efficient care. That is to say, that we are losing each year in the United States about 150,000 human lives at their very beginning because those who know, including national state and municipal governments, and the better individual citizens, are not rendering effective aid to this dependent class of our population.

Let us discuss, briefly, some of the causes, general and specific, of this waste of baby life:

The two general causes everywhere recognized and always present when infant mortality rate is unduly high are: First —Poverty. This is a sad condition, and the solution of it should concern every thoughtful citizen. It presents difficulties which are far beyond the scope of this address. It can be said, however, that one of the strongest arguments in favor of the abolition of poverty, one of the greatest incentives in the effort to bring a fair competency within reach of every industrious family, is the crying need of the helpless babe. Repeated investigations have shown that the death rate under one year in families whose earnings are less than $10 a week exceeds 250 per thousand, 1 to 4. Whereas, when the family income exceeds $25 a week the infant death rate is but little over 80 per thousand, or about 1 to 13.

It is easy to imagine the effect of grinding poverty upon the health of a family. It means bad housing conditions, overcrowding, often immorality; it means the employment of mothers as wage-earners in factories or stores; it means the lowering of the standards of health, with increased nervousness and anxiety and an undercurrent of dread of the landlord, of grocery bill and of creditors in general, which creates an atmosphere in which it is very difficult to make a baby thrive. I am still old-fashioned enough to hope for an industrial regime throughout the country which will insure to the father or to him with the adult single members of the family a sufficient income to comfortably support the wife and younger children.

When this state of affairs arrives the infant in the family will have a better chance. Relief has been sought in many countries and in some of our own States through maternal insurance. The variety which seems best adapted to conditions in this country is a form of sick policy insurance, in which maternity, a period of several weeks before and after the baby's birth, is treated as illness. In this way mothers are not obliged to work near the birth of their children.

The second general cause is ignorance. Nothing is more pitiable in visiting among the homes blessed by baby life than the widespread ignorance among young mothers concerning those matters that are essential to the baby's welfare. This, of course, is partly remedied by skilled attendance, but ignorance, together with poverty, make a combination very disastrous to the helpless baby. It fortunately is true that nearly all mothers, even though they may be ignorant, are interested and willing to learn. They always welcome the visit of a tactful physician or trained nurse. They are now learning inadequately and with difficulty after they have become mothers many things that they should have known in their school days.

If we would adequately reduce the infant death rate of the future, we must see to it that our older girls throughout the country are not permitted to leave school until they have received considerable instruction in personal hygiene and household economics, including the care of infants. When instruction of this kind is universal, much of this now necessary effort to instruct the mother in her home, often too late to save the baby, will become unnecessary.

There are, in addition, a number of specific causes leading to the loss of infant life, which can be briefly referred to.

First—Diseased Parents: When we consider that a third of the total death rate in the first year occurs in the first month and much of this among babies who are brought into the world too weak too live, because of inherited disease or weakness, it is high time to consider whether the public or the State should not take adequate means to prevent the marriage of the notoriously unfit. It is asking very little of the healthy to submit to a physical examination before marriage, when this general requirement means much to the community. When we learn that more than one-fourth of all the premature babies born in a large obstetrical service are leutic, we have reached a time when the rights of the baby demand that we shall deal with this subject radically.

Second—Overworked Mothers: It has been repeatedly shown that mothers who work immediately before confinement have smaller, less vigorous children, and that those who work immediately after confinement are much less able to care for their babies properly. It is the part of charity, nay, rather of justice, to see that this abuse of nature's laws does not take place.

Third—The Failure of Breast Milk: Here the physician is largely at fault. The difficulty of adjusting its mother's milk to the young infant, which is so often encountered in the first weeks of the baby's life, is made an excuse for weaning, in many cases unnecessarily. It has been found that 60 per cent of working women in Baltimore, reached through our clinics, can nurse their babies for several months if encouraged and instructed to do so. It must be remembered that any bottle feeding substituted for breast milk requires a considerable degree of intelligence, an increased amount of time, money and more individual attention, all essentials which are difficult to obtain among the working people.

Fourth—Impure Cow's Milk: Surely, if mother's milk fails, a self-respecting community should see to it that pure cow's milk is obtained for the new-born baby. It should be impossible for a mother to buy at public sale impure milk. Here she must be protected by carefully drawn and conscientiously enforced laws, because there may be nothing about the appearance of the milk to inform the purchaser that she is getting more of a poison than a food. Our milk supply in Baltimore has improved considerably in recent years, but it is still far short of a satisfactory product. It was the intention of those who were interested in having passed our present milk ordinance to give the Commissioner of Health sufficient power to enforce any milk standard he saw fit, and power to revoke any license on ten days' notice to a dealer or milk handler whose product fell below the required standard. In other words, it was the aim to concentrate in one person, the Commissioner of Health of Baltimore City, the responsibility for maintaining a satisfactory milk supply. It is most unfortunate that the legality of this ordinance has not been finally tested. In a number of instances where the Health Commissioner has endeavored to exercise its powers as prescribed in the ordinance, he has been enjoined by the courts from proceeding further, and the wheels of justice move so slowly that no case has been finally tested in the Court of Appeals. It is very desirable that this should be done promptly, and if the ordinance is defective that another should be drawn, enlarging the powers of the Commissioner of Health. Baltimore is situated in the midst of an excellent dairy country and could furnish its citizens better milk than any other city of its size. Encouragement of breast nursing, and when this fails the use of properly modified cow's milk, up to the present time have been the most important factors in reducing infant mortality. The greatest reduction of infant death rate has occurred in the gastro-intestinal group. It is interesting to notice in Baltimore, from statistics recently compiled, that the very large increase in the number of infant deaths from gastro-intestinal disease taking place in the summer months has been greatly reduced in the last few years.

Fifth—Crowded Dwellings: The close atmosphere which is found particularly in cold weather in so many homes, together with the overcrowding incident thereto, accounts for the great increase in details from pulmonary diseases among young infants in the winter. These deaths are almost as many in the winter as are those from gastro-intestinal disease in the summer We are particularly negligent in the housing provisions offered to our colored population. This race, distinctly less resistant than the white, has double the white death rate and harbors all sorts of diseases, which are a continual menace, not only to themselves, but also to their white neighbors. Twenty-five per cent of the colored babies born in Baltimore are born out of wedlock. The inadequate housing conditions, which the white race thrusts upon the negro, greatly encourage this immorality. Here, again, the claim of the baby should be heard voicing its protest against the exploitation of a weaker race.

Sixth—Institutional Life: A word must be said concerning the care of very young babies, particularly the foundling and illegitimate child in institutions. Whenever this has been tried, even under fairly good conditions, the death rate has been enormous—60, 70, 90 per cent. The truth is that the new-born baby requires individualizing care, which is very difficult, almost impossible to secure in a large institution. The practice which is so general in Maryland at present, of permitting the mother of an illegitimate child on the payment of a sum of money to place the child in an institution, sometimes before she has ever seen it, results usually in its speedy death, and in the waiving of maternal responsibility, which is hers, and which has been shown to be the most potent influence in helping her to lead a normal life. The record of the Henry Watson Children's Aid Society, which has now cared for several hundred mothers and illegitimate children, with an infant death rate of about 5 per cent, is in marked contrast to the legalized slaughter which occurs in many large infant asylums.

Seventh—Good Obstetrics: I have not referred to the baby's right to clean, skillful obstetrical care. From the lack of it hundreds of lives of both mother and child are unnecessarily lost. There is a crying need, which those much better equipped than I to discuss the subject have repeatedly emphasized, of thorough-going, radical reform in the handling of obstetrical cases among the working classes.

These are some of the important causes which at present needlessly destroy many infant lives. In the long future improved social conditions and universal information concerning household economics and baby hygiene will result in the reduction of many of these ills, but there is much to be done in the present and in the immediate future. Today, in Baltimore, many babies are dying because their mothers do not know how or have not the means to keep them well. And it is just here that outside philanthropic organizations devoting themselves exclusively to the welfare of the baby are of the greatest help. This infant welfare movement was started 24 years ago in Paris, and has spread rapidly throughout all civilized countries. The main endeavor of them all is to bring advice and material help in the care of their babies to the mothers needing it.

Our Babies' Milk Fund Association in Baltimore was started by the Thomas Wilson Sanitarium in 1904. The first year's work was made possible by the generosity of Mr. Jacob Epstein. At first we had four stations and comparatively few babies. We have gradually grown to 16 stations, with as many nurses, and we reached in the course of last year over 7,000 babies. Our nurses give their entire time to the care of infants and of children under three years of age. They have daily office hours in the stations, and respond to sick calls sent in by physicians and visit from house to house, instructing mothers how to feed and take care of their children.

In recent years, through co-operation with the large obstetrical clinics of the city, we have been able to come in contact with thousands of mothers before their babies were born. In these pre-natal visits the nurse can see if adequate preparations have been made for the babies, whether the mothers have any abnormal symptoms requiring a physician's advice, and after the babies are born, as a friend, she can follow them with her advice and help throughout their infancy. Our welfare stations work in cordial co-operation with the city dispensaries and public clinics throughout the city. A nurse is assigned to the out-patient clinic of the Harriet Lane Home, and is prepared to help the mother in her own home carry out the dietary instructions given by the dispensary physician. Once or twice a week in each station consultations are held, in which mothers bring their well babies for inspection and advice by physician and nurse.

In the summer months the Thomas Wilson Sanitarium is open to receive without charge any babies which are in need of hospital treatment in the country. These children are returned in convalescence to their homes under the direction of the nurses of the Babies' Milk Fund Association. During the last year, with the consent of the Health Commissioner of Baltimore City, the Babies' Milk Fund Association has had access to the birth registrations. By this means we are able to come in contact with many babies needing help which we either did not reach before, or perhaps only after they had become ill.

In Locust Point, a comparatively isolated district, an obstetrical clinic, under. charge o fa well-trained physician, a woman, is being maintained, and her services are being much sought for.

In order to do this work adequately we should have almost twice as many nurses and stations. Does work such as is being done by the Babies' Milk Fund Association pay? In the last six years we have reached 26,137 babies, of whom 1300 have died. If the average city death rate had pertained among these babies, 3300 would have died, so that one can see as the result of this organization that approximately 2,000 lives have been saved in six years. This work, let me repeat, must be looked upon as emergent in character. It ought not to be necessary, but until the wages of our working people are adequate to support their families in decency, until knowledge of baby care is made part of the mental equipment of every girl growing into maturity, work such as I have outlined is of more importance than that of any other department of preventive medicine, if we would save a constantly increasing number of babies to take their places among and share in the work of the succeeding generations of our citizens.

The Severn, Cathedral Street.

RESPIRATORY DISEASE IN THE YOUNG*

BY A. C. WEAVER, M.D.
Indianapolis

It is my purpose to discuss certain limited aspects of the more common respiratory diseases in the first few years of life. First, I will consider briefly a few points in regard to lobar pneumonia, which occurs in patients only a few days old, but more frequently after the second year. The etiological factor of course is always the pneumococcus, but recently this organism has been classified into four general groups, each being made up of many races, which are closely related. This division of the pneumococcus is of importance, especially from the standpoint of treatment, since a serum or vaccine from organisms of one group are not applied in treatment of pneumonia due to organisms of another group, but it is hoped in time, that this will bring about a specific treatment by means of scientific sera or vaccines.

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*Indianapolis Medical Journal.

Important advances have been made in regard to the progress of pneumonia by the Roentgen ray. Examination by this method shows that the consolidation evidenced by the shadow passes through a regular development. According to Mason, from 37 cases studied, the disease in the beginning is a triangular shadow with its bast on some portion of the lung periphery, and its apex pointing toward the hilum of the lung, or in other words the process seems to begin in that part of the lung fartherest from the hilum with the base of the triangle on the pleura. Gradually the triangular shadow spreads up and down toward the root, into the normal area, until most of one lobe is involved. Later in the development, the shadow extends in size and becomes uniform from the periphery to the root of the lungs, when bronchial voice and breathing are present, but not otherwise. The reason for this, of course, depends upon the fact that the bronchial breath sounds are dependent on the presence of a medium of comparatively uniform density from the site of their origin (the trachea and large bronchi) to the point where the instrument is applied, and of course is the explanation for the comparatively late appearance of the definite physical signs in lobar pneumonia in infants.

Broncho-pneumonia in contrast with lobar pneumonia is perhaps the most common disease in early infancy, and almost invariably occurs as a sequel to acute bronchitis, or one of the infectious diseases involving inflammations in the upper respiratory tract. Very often the process begins as an inflammation in the terminal bronchioles, and by extension involves the air cells, and acquires the characteristics of a true pneumonia, it offers no self limitation, requires careful consideration, because unlike many other diseases, as lobar pneumonia, it offers no self limitation, its course and prognosis being unfavorably influenced when it complicates poorly nourished infants with infectious or constitutional diseases.

Empyema in children is much more frequent than in adults. Statistics show us that almost half of the pleurisies in infancy and childhood are purulent, while only 5 per cent result in a suppurative inflammation in adults. Again, although empyema is most frequently a complication of pneumonia, it may follow any of the acute infections of the lung or pleura.

An early diagnosis is of utmost importance, and no diagnosis of empyema should be regarded as complete without exploratory puncture as this is the only method by which a differential diagnosis from serus pleurisy, etc., can be made.

The next subject which I desire to mention in passing is acute bronchiectasis, for which the predisposing causes are measles, whooping cough, and influenza. The disease itself possesses no pathognomic symptoms, so that the diagnosis is often difficult, and the age and antecedent history of the patient, the evolution and peculiarities of the disease must be taken into consideration. However, during the progress of the acute stage of bronchiectasis, it is usual to find pneumonic and peribronchial congestion. Enlargement of the intertrachiobronchial glands is also almost always present, and according to Triboulet, controls another symptom, namely, tachycardia, which in itself has a certain diagnostic value. Hypertrophy of the lymph nodes in varying degrees has already been noted in autopsies after infantile bronchiectasis, and must be distinguished from tuberculous infection, which invades the patient secondarily. Complications in this disease are uncommon, but pulmonary gangrene, and even abscess have been observed. Lastly, we will consider tuberculosis, and first discuss the primary lesion, which most writers agree occurs at the portal of entry. Entering the organism by means of the respiratory tract, tuberculosis first localizes in a small almost microscopic lesion in the lung itself. Secondarily, the bronchial glands become involved, and in some cases a more or less generalized miliary tuberculosis will be present. Also, in some instances, the secondary lesion is a peritonitis or meningitis, which is evidence of the great dissemination of tuberculosis lesions in young subjects.

In regard to diagnosis of tuberculosis in infants, the family history must first be considered with special attention, of course. to whether the mother is infected with the disease. The physical signs also differ as to the age of the patient, and leads us to the question of congenital or placental tuberculosis, which has been reported more frequently in the last few years. From a pathological standpoint, there are two forms of tuberculosis in the newborn, both miliary in type, namely, the pulmonary and the abdominal. The pulmonary form is not always of placental origin and seems likely, in some cases to result from the liquor amnii, or vaginal secretions at the time of birth Of course the likelihood of the disease being hereditary has been disproven, as it has long been held that an active tuberculosis bacillus is fatal to the germinal cell. Having digressed thus far, we will return to the diagnosis, and consider first the clinical symptoms of the newborn infant. The combination of enlarged spleen, irregular temperature, and enlarged liver, would, of course, be suggestive. The tuberculin test in the newborn is always negative, due probably to the fact that the child offers no resistance to the disease. The prognosis is fatal, and the duration of the disease is rarely over 3 or 4 weeks. One of the important signs of the tuberculous child is the fact that it is undersized and underweight. Closely associated with the question of weight is that of nutrition with pallor, anemia, weariness and loss of appetite. A hard, dry cough, persistent in character, is suggestive of tuberculosis. Also, in the breast fed, a persistent diarrhea is often present. In the examination of the chest, attention is first drawn to dilatation of the superficial veins, probably due to the enlargement of the mediastinal glands, when present.

Other signs indicating glandular enlargement include interscapular dullness, and whispered pectoriloquy beyond the normal limits. Also, accompanying these signs, inequality of the breath sounds, bronchial breathing with an expiratory crow and moist rales, are likely to be present to confirm the diagnosis. Besides the physical signs, we have the cutaneous reactions, and the Roentgen ray findings. A negative von Pirquet, to my mind, gives no evidence at all, but a positive reaction in infancy means tuberculosis. The importance of the X-ray depends upon the ability to translate the picture, but are in competent hands some aid to diagnosis, especially in the secondary lesions with enlarged glands.

Finally, in treating tuberculosis in children, tuberculin, properly administered, in my mind is an important aid. The best method is to start with a very small initial dose and increase this as rapidly as possible. The interval between treatments is usually four or five days, and the site of the injection between the shoulder blades, but never in the same place.

Tuberculous disease in adults results in a large number of cases from tuberculous infection in children.

GENERAL PERITONITIS FOLLOWING APPENDICITIS IN A CHILD FIVE YEARS OF AGE; OPERATION; RECOVERY*

BY J. GARLAND SHERRILL, M.D.
Louisville, Ky.

Patient, Ruth M., white, age five years, was seen by me on December 24, 1915, with the following history:

She had been feeling more or less ill for two weeks. On December 20th at midnight she came to her mother's bed complaining of pain in her stomach. She had eaten a rather hearty meal at supper-time the evening before. She was given an enema and some laxative tablets, the latter being vomited soon afterwards. The next day a tube was inserted into the bowel and it was emptied, without the passage of any gas. Her temperature was 100 F.; she had had no food since the beginning of the attack. The next day the child seemed to be somewhat improved, but was still not well, and her bowels were markedly constipated. The following day she passed some fecal material and a small amount of gas. She was still receiving no food. The next night at ten o'clock she was seized with sudden severe pain in the abdomen, accompanied by shock and vomiting, although there was no fall in the temperature at that time. The next morning she still had some nausea; the abdomen was only slightly distended but quite board-like; temperature about 102, and the general picture was one of extreme illness. Dr. P. F. Barbour was called and I saw the child about an hour later, and after careful examination, diagnosis of general peritonitis resulting from appendicitis was made. The child's abdomen was opened about noon of that day, because we believed that operation offered the best chance of saving her life. The diagnosis was confirmed, the appendix was removed, a drain inserted and the abdomen closed as quickly as possible. The child was put to bed with a very fast pulse and in a very grave condition. Proctoclysis with normal saline solution was instituted and she was propped up in bed. The child improved steadily. I left the city a day or two after the operation, and a day or two later the physician in attendance pulled up the wick drain and cut it off. On the following morning the nurse was asked to remove the remainder of the wick, and when she did so she did not find any gauze in it. It was a question whether all of the gauze had been removed when the drain was first pulled up and cut off, or whether some of the gauze remained in the abdomen. At any rate, the abdomen flattened down, the discharge ceased and the child was taken home on January 1st. Four days later an indurated spot was noticed on the left side of the abdomen, and the application of heat caused the evacuation of a considerable quantity of pus through the site of the wound. Following this, the child went on to an uninterrupted recovery.

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*The Louisville Monthly Journal of Medicine and Surgery.

Many operators contend that when a child is as sick as this little girl was, it is better to carry out Ochsner's method of expectant treatment, and thus carry them over until they become safer operative risks. I believe that, if this plan had been followed in this case, the child would have died; that the prompt removal of the appendix and the establishment of drainage, thus preventing further leakage into the abdomen, saved her life.

DISCUSSION

Dr. P. F. Barbour: I was called into this case by Dr. Mounsey, who told me that strong purgatives which had been given the child, had failed to produce a stool. When I examined her, there was considerable tenderness all over the abdomen, and thought I could detect a mass to the left of the navel. I concluded that the appendix was the probable source of the trouble, and suggested calling a surgeon, and Dr. Sherrill saw the case an hour later.

It is very difficult, in a child of this age, to determine the exact site of the greatest pain. In a case which Dr. Frank operated upon for me, and which proved to be a case of appendicitis, most of the pain seemed to be located just over the liver The condition found at operation necessitated very prompt work, to get the child off the table as soon as possible.

Some twelve days after the operation, Dr. Mounsey called me, saying that the child had a temperature of 104 F. and was suffering considerable pain. This was due to the abscess which Dr. Sherrill mentioned, and by the time I got there the abscess had ruptured and discharged, and the child then went on to an uninterrupted recovery.

Children do not stand appendicitis as well as older people; it seems that Nature does not make much of an effort to wall off the infection in children, and they yield more readily to the toxins of the condition. I recall a case which the late Dr.

Cartledge operated upon for me. This child had a little mass in the abdomen near the navel, and he removed a small enterolith. Within three months he had to do another operation for the removal of the appendix. These two cases convince me that we may sometimes have extensive inflammation in the abdomen, remote from the appendix, but of which the appendix is the primary cause. In the case reported tonight, I believe the abscess near the navel wass walled off, but finally found its way out at the point of least resistance.

Dr. G. A. Hendon: Through the kindness of Dr. Sherrill I was privileged to see this operation. The question that arose at the time of the operation was, whether the appendix should be removed or simply drained? This is, perhaps, the only unsolved problem in connection with appendicitis at the present time. This child had free pus in the abdomen, and there did not appear to be any limiting wall whatever; as soon as the incision was made the pus began to flow. Dr. Sherrill, very wisely it seems, decided to do a complete operation and removed the appendix. However, there is a great deal to be said both for and against a complete operation in such cases. My own experience has always been in favor of a complete operation, even in the presence of free pus. I had three cases in succession where there was a considerable amount of free pus present, and in each case I made free opening and established the best drainage I could. One of these cases later developed a subphrenic abscess, which ruptured into the bronchus and the child recovered only after a protracted period of four or five weeks, during which time he spat up large quantities of foul-smelling, colon-bacillus pus. In another case, which followed closely upon this one, the patient, after having apparently recovered, developed an enormous abscess, just to the left of the median line, very low down. This was opened by incision in the median line between the umbilicus and the pubes, and an enormous quantity of pus evacuated. A fecal fistula developed, and the patient did not get well for six months. A third case resulted in perforation of the pus into the bronchus, and the patient recovered only after a stormy period. during which he spat up enormous quantities of pus.

My experience in these three cases led me to adopt the rule of locating the source of the trouble and removing it. It is very important, in dealing with these conditions, to circumscribe the area of infection by means of a coffer-dam, which can be accomplished by a large incision and a proper distribution of gauze.

Another important consideration in the management of these cases is to not remove the drain too soon. It is my custom to pack the abscess cavity with gauze drains in rubber tissue, and to put in enough to occupy the space formerly filled with pus, and to wait at least six days before removing any of them. By removing the drains too soon, we expose the fresh surfaces which re-absorbs the infection, and we have a more or less exaggerated degree of relapse.

In regard to the mass which we usually find in the abdomen in these cases, I believe that, in the majority of cases, this is not due to an accumulation of pus, but to the omentum folding itself to form a bulwark of defense against the advancing suppuration. This would account for the mass being remote from the site of infection.

Dr. Louis Frank: Dr. Barbour has called attention to the fact that it is not always easy to diagnose appendicitis in children. The localization of pain in a child is nearly always indefinite · we rarely find it localized in the right iliac fossa. Furthermore, there is a possibility, in children, of puenmonia in its early stage, being mistaken for appendicitis, and in cases of right iliac fossa pain I am very particular to have the attending physician carefully interrogate the pulmonary organs with a view of eliminating the possibility of pneumonia.

The case reported by Dr. Sherrill tonight very strikingly illustrates what we may expect to follow the administration of purgatives in the presence of a condition such as this child had.

The point made by Dr. Hendon in regard to Nature making no effort to wall off the infection in children is borne out by my own experience. Therefore, the infection is, as a rule, very widely diffused.

To my mind, there is no question as to what should be done after opening the abdomen in these cases, as a rule. The appendix should be removed. Of course, there are exceptions to this rule. In some cases we may search all day and not be able to find or identify the appendix. Just what to do will depend upon the condition found after the abdomen is opened, and the judgment of the surgeon is called into play, but I think it is safe to adopt the rule that the appendix should be removed whenever possible.

There can be no hard and fast rule in regard to drainage.

In some cases, where the leucocyte count is high, we can close the abdomen without drainage. I have done this repeatedly without any untoward results. In another case we may put in a little wick drain and remove it in twenty-four to forty-eight hours. Where multiple drains are introduced they shou be removed in from forty-eight to seventy-two hours.

Dr. J. Garland Sherrill (closing): The point I wish to emphasize in connection with this report is that the diagnosis of appendicitis in children is not as easy as it is in adults. As pointed out by Dr. Frank, pneumonia in children is sometimes mistaken for appendicitis.

Another thing that I would lay stress upon is the danger of administering purgatives in the presence of pain in the abdomen. We formerly considered it the proper thing to give purgatives in all cases of appendicitis, and I believe this has been the cause of more deaths from appendicitis than any other one factor.

The cardinal principles in dealing with cases of the kind reported tonight are, prompt surgical intervention, rapid work with little manipulation, removal of the appendix and carefully applied drainage. I usually coffer-dam the abdomen before opening abscess, but I do not pack the cavity afterwards.

MEDICAL INSPECTION OF SCHOOLS*

BY ROBERT D. LUSTER, M.D.
Granite City, Ill.

With the great changes which have been coming over American life, former conditions have disappeared and undisturbed indifference to the physical welfare of our school children has become impossible.

The school year has changed from a three months winter term to one of ten months during the year. Going to school has become not only the normal but the required occupation of all children for a considerable number of years. The state has decreed that all children must attend school. The object was to insure that children should have sound minds. One of the unforseen results was to insure that they should have unsound bodies.

It was found that compulsory education under modern city conditions meant compulsory disease. Medical inspection is the device created to remedy this condition. By this we mean an extension of the activities of the schools in which the educators and the physicians work jointly to insure for each child such conditions of health and vitality as will enable him to take full advantage of the free education offered by the state.

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*Read before the Madison County Medical Society at Godfrey, Ill., June 2, 1916, President's annual address.—Ill. Med. Jour.

Medical inspection of schools was first provided for some eighty years ago in France, but it is only during the past quarter of a century that it has assumed the proportion of a world wide movement. Boston was the first city in the United States to establish a regular system of medical inspection in 1894. This movement came as a result of a series of epidemics among the school children. Chicago began in 1895, New York in 1897 and Philadelphia in 1898. The movement rapidly spread from the great cities to the smaller ones. In many cases it was started by a local medical society offering to carry on the work for a limited time, without expense to the municipality, in order to demonstrate its desirability. Wherever established, the good results have been evident. Epidemics have been checked or avoided. Improvement has been noted in the cleanliness and neatness of the children. Teachers and parents have come to know that under this system it is safe for children to continue in school in time of threatened or actual epidemic. But medical inspection does not stop here, nor has it limited its activities to the field outlined.

School men discovered that compulsory education was bringing into the schools hundreds of children who were unable to keep step with their companions, and, because this interfered with the ordinary administration of our school systems, they began to ask why the children were backward, and knowing something of the wonderful advances made in the field of medicine they turned to the physician for aid.

The school physician showed that a great many of their children were backward, simply because of removable physical defects.

The scope of medical inspection was thereby extended to include the physical examination of school children with the aim of discovering whether or not they were suffering from such defects as would handicap their educational progress.

A surprising number of school children have been found who, through defective eyesight, have been seriously handicapped in their school work. Many are found to have defective hearing. Other conditions such as adenoids, enlarged tonsils, swollen glands and carious teeth have a great and formerly unrecognized influence on the welfare, happiness and mental vigor of the child.

In small communities the employment of physicians for this work has been proven to be practically impossible, as it involves too great expense and almost invariably produces professional jealousy and friction.

The experiment is being employed in small towns of engaging school nurses to act as medical inspectors and so far the plan has given great satisfaction where it has been tried.

Owing to a threatened epidemic of diphtheria last October, the writer was able to induce the Board of Education and the City Board of Health in the town in which he lives to jointly employ a nurse to act in the dual capacity of visiting nurse and medical inspector of schools. This arrangement proved very satisfactory indeed.

Of course she could not diagnose disease as well as a medical man, but this was really not necessary, as her function was not to treat the children medically, or surgically, but to ascertain the existence of disease and defect and then refer such abnormal children to a doctor, after which she could, if necessary, assist the doctor in carrying out his advice.

Her work was carried on in the following manner: She visited each school building daily and the teachers were instructed to send to her any pupil who appeared not to feel well or who complained of being sick. If a child had been absent from school on account of sickness and had not been under the care of a physician, he was referred to the nurse before being allowed to take his place in the school room.

She would take the child's temperature, examine the throat. see if glands in neck were enlarged and examine the body for eruption. If the throat was suspicious she would take a culture and exclude the child from school until a report was received from the culture.

When the child was excluded he was given a card to the parent or guardian notifying them of the condition and advising them to consult their family physician. In this manner she discovered ten cases of diphtheria and three cases of scarlet fever attending school and in our opinion was a great factor in controlling contagious diseases.

After the threatened epidemic subsided she made an examination of each child for eye, ear, nose and throat diseases, at the same time watching closely for contagious diseases.

This examination was made as suggested by Dr. Frank Allport of Chicago. Nine questions absolutely plain and simple in their character are arranged for which she obtains answers. They are, for instance, such questions as these: "Does the pupil habitually suffer from inflamed lids of eyes?" "Does the pupil fail to read a majority of the letters in the number XX line of Snellen's test type with each eye?" "Does matter or a foul odor proceed from either ear?" "Is the pupil an habitual mouth breather?"

One thousand nine hundred and forty-three children were examined with the following results:

Defective throats	14 per cent.
Defective noses	7 per cent.
Defective ears	3 per cent.
Defective eyes	12 per cent.
Defective teeth	35 per cent.
Not vaccinated	77 per cent.

Although this examination was not made until April and the first part of May, more than 100 children have had their teeth attended to, 10 have had ears treated, 4 have had adenoids removed, 8 are now going to the oculist, 12 whose parents were not able to pay for having their eyes examined were taken to an oculist by the nurses and through the kindness of our ladies' charitable organizations were supplied with glasses. A number of parents have promised to have the defects of their children attended to during the summer months.

These tests should be made as soon as possible after the opening of the fall term, as this is not only the most convenient time for the work, but it will give the nurse ample time to follow up the tests and watch the effect of medical treatment.

I believe that you are all interested in the physical and moral welfare of our children.

You, as physicians, know that bad vision and hearing constitute an important barrier to the reasonable and easy acquirement of an education, and that a vast number of children are thus embarrassed. You will agree that a great benefit to the children and to society at large would be effected if such physical defects could be detected and relieved.

. Then may I ask you: Why do you not take up this work, secure the co-operation of your board of health and board of education and carry it through?

The writer has referred to the work of Gulick and Ayres on "Medical Inspection of Schools," Dr. Frank Allport's papers on "The School Nurse," and "The Eyes and Ears of School Children" and respectfully refers you to same.

SOCIETY TRANSACTIONS

Transactions of the American Pediatric Society*

Twenty-eighth Annual Meeting, Held at Washington, D. C., May 8, 9, 10, 1916.

The President, Rowland G. Freeman, M.D., of New York, in the Chair.

Provocative and Prophylactic Vaccination in the Vaginitis of Infants.—Dr. Alfred F. Hess, of New York, read this paper. He said that in the institution with which he was connected their efforts were directed toward preventing the admission of infected infants, in attempting in many different ways to avoid the spread of the infection, in diagnosing the cases at the very earliest possible moment, and, finally, in resorting to every means to effect a cure. There was no doubt that vaginitis might be due to other organisms than the gonococcus. Tests had been carried out by Dr. Edwin Langrock that showed that pus cells might be found in the smears taken from infants during the first 48 hours of life and that these must not be regarded as pathological but as a probable reaction of the external tissues to the inevitable invasion of bacteria. They had found that the fundamental cause of vaginitis must be considered to be the latent carrier, some healthy infant who harbored the gonococcus. During the past five years autopsies had been performed on four infants who had vaginitis while in the institution. They all showed the same pathological condition. Microscopically the vagina appeared negative, as did the body of the uterus and appendages. The only abnormal condition was redness of the tip of the cervix, so that we must regard the average gonococcus infection as a cervicitis rather than a vaginitis. The degree of vaginitis in children who applied for admission to the institution was about 50 per cent, indicating that the disease was not particularly associated with child-caring institutions. In order to overcome the danger of the latent carrier they had, during the past year, administered three injections of gonococcus vaccine to infants soon after they were admitted to the institution. The object of these injections was provocative, to see if they would bring to light a latent infection. The dosage was entirely empirical. At the present time they were giving 100, 200 and 400 millions. Usually two injections were sufficient to bring about a reaction. During the past year these provocative injections had led to the discovery of eight new cases during the first week or two after their admission to the institution. The vaccine was found to be valuable, not only for diagnostic measures, but to a certain extent for prophylaxis. It had been used in about 100 infants and by it they had been able to change the entire nature of the vaginitis in their institution and as a result they had a nonclinical type of the disease. There was not only an acquired susceptibility to gonococcus infection, but also a natural susceptibility and a well defined natural immunity. This immunity was rare and in many instances not absolute.

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*Medical Record.

The Calcium Content of the Blood in Rachitis and Tetany.—Drs. John Howland and McKim W. Marriott presented the results of this investigation. They reviewed the theories that had been advanced in respect to rickets and calcium metabolism, and said that there had been no studies made to show whether calcium was present in sufficient amounts in the blood of rachitic patients. They had advised a method by which they could determine the amount of calcium in one-half c. c. of blood serum, and had determined the calcium content in the blood of 11 cases of rickets and a number of controls. They had found in the greatest number of instances a value between 10 and 11 mg .per 100 c. c. of blood serum. In those having rickets there was in some instances a reduction of calcium, but they never found less than 9 mg., and often ten or nearly 11, so they thought that they could say that rickets did not depend upon an insufficiency of calcium, but primarily on some condition in the bone. It had also seemed that some calcium disturbance was related to the onset of tetany. They therefore determined the amount of calcium in the blood of seven infants with tetany by means of accurate technique and all showed a marked reduction in the calcium content of the blood. They found that in general the figures ran between 6 and 7 mg. of calcium per 100 c. c. of serum, though in one instance it was as low as 5 mg. They also made the determination in two children with no active symptoms of tetany, but who gave an electric reaction, and in one of these there was a moderate reduction of the calcium and in the other none. When the child lost the evidences of tetanus the calcium content of the serum became normal. The findings in children with convulsions were almost the same as in dogs that developed tetany after thyroidectomy, in that the calcium content was somewhere between five and seven mg. per 100 c. c. of serum. It seemed that the parathyroid exerted a distinct effect on the calcium in the blood.

Early Morning Toxic Vomiting in Children.—Dr. Thomas S. Southworth, of New York, read this paper in which he directed attention to the vomiting of children which not infrequently occurred in the early morning either before or soon after the first feeding. This he believed was of toxic origin since the vomitus after the long night period contained no food residue unless a morning feeding had been given. It was sharply distinguished from the vomiting of undigested and fermenting food from failure of gastric digestion, which usually occurred later in the day. The cases, one of which was related as typical, had neither the characteristic histories nor clinical symptoms and course of recurrent vomiting, which was another toxic type. In the recurrent type the toxemia was probably of gradual and cumulative evolution, brought to a head by constipation or some unusual factor. Elimination was slow and vomiting prolonged. Fever was not constant. In the type under consideration with early morning vomiting fever was a usual accompaniment, often rising sharply, and there was an acute putrefactive process in the intestine with absorption and attempted re-elimination by the gastric mucous membrane It was assumed that this toxic material accumulated in the stomach during the hours of slumber when reflexes were more or less deadened and asserted its presence in vomiting after awakening. Purgation resulted in foul stools often containing mucus. After the stomach was emptied by one or two acts of emesis at short intervals there was not the same tendency to recur which obtained in the recurrent type. The extreme caution in the resumption of feeding often displayed after attacks of recurrent vomiting frequently led to undernutrition in children whose attacks occurred at rather short intervals. A slightly greater care was demanded in the acute toxic type of intestinal origin, especially in the summer months because of the intestinal condition, but with care and reasonable feeding might be promptly inaugurated. The author believed early morning vomiting without food residue from the previous day to be a sign of value as indicating an acute toxemia arising in the intestinal tract.

Measles, Pertussis, and Pneumonia.—Drs. P. J. Eaton and E. B. Woods, of Pittsburg, reported a group of cases which appeared simultaneously in one family chiefly because it showed the peculiar mix-up of infectious disease that might be possible. Two children in a family were about half way through whooping cough when a third came down with measles, then whooping cough, followed by a chest deformity which gradually disappeared. One of the two children having whooping cough contracted measles, which was followed by pneumonia, while the other did not; the latter child was watched very closely. The measles cases were treated by cool, fresh air and vaccines. Dr. Eaton stated that it was his custom to administer vaccines to children who were exposed to measles.

Scarlet Fever and Measles Occurring Simultaneously.—Dr. D. J. Milton Miller, of Atlantic City, presented this paper. He said he reported these cases not because of their great rarity but because they were interesting. There was an impression that if a child was suffering with one infectious disease he was immune to others, but this was a mistake. Patients suffering with one infectious disease seemed to be more susceptible to other infections. This seemed to be especially true of measles, pertussis, and scarlet fever. It was quite usual when one of these diseases occurred to have it followed at short intervals by another or they might be concurrent from the outset. In scarlet fever and measles the diagnosis was very difficult. The case presented had the usual symptoms of measles. On the tenth day a characteristic scarlatinal desquamation was observed, and a complicating otitis media followed. Three sisters of the patient contracted measles but not scarlet fever. One of these children who was not isolated did not contract scarlet fever. One of the sisters who never came in contact with the patient contracted measles.

Dr. Matthias Nicoll, of New York, emphasized the fact that the character of the desquamation in scarlet fever was not always typical. He had seen sheet desquamation in measles, though it was rare.

Dr. Miller said he felt convinced that his first case was one of scarlet fever, as the peculiar eruption at the finger nails was present and he had never seen this in any other disease than scarlet fever; his diagnosis rested to a great extent on that.

Observations of Measles.—Dr. Charles Herrman, of New York, presented this communication. He stated that the deaths reported as due to measles gave an inadequate idea of the real number caused by this disease. A large number died from complicating broncho-pneumonia, especially between the ages of one and two years This was suggested by the parallelism between the curve of morbidity from measles and the curve of mortality from broncho-pneumonia between one and two years of age. In a series of 300 secondary cases of measles which he had observed, the fever appeared on the tenth or eleventh day from the time of infection in 56 per cent; catarrhal manifestations on the eleventh or twelfth day in 60 per cent; the tonsillar spots on the ninth day to the thirteenth day; the Koplik spots on the eleventh or twelfth day in 54 per cent; the eruption on the twelfth to the fourteenth day in 67 per cent. In 7.2 per cent the catarrh was present on or before the tenth day; the Koplik spots in 12.8, and the tonsillar spots in 34 per cent. In 4 per cent of the cases in which the tonsillar spots were present as early as the seventh day and in a few cases the tonsillar spots were present in patients who did not show the Koplik spots. The presence of the tonsillar spots would be found valuable in schools, hospitals, and asylums, in detecting and isolating patients early. Infants under two months of age were absolutely immune. At eight months this immunity had gradually disappeared. This gradual disappearance was shown by a longer period of incubation. In infants between five and tight months the disease was usually milder. This was shown by the fact that only 41 per cent of these lost weight, whereas of those between eight months and two years 76 per cent showed such a loss. The immunity was probablyconveyed through the placental circulation; only those infants whose mothers had the disease seemed to acquire it. Infants between three and five monthe who had come into intimate contact with measles and did not contract it, sometimes were not infected when exposed later in life.

Dr. Henry Koplik said that five days before the appearance of the eruption in measles a febrile movement and the Koplik phenomenon might be observed. There was absolutely no other reaction during this time except the slight fever.

Dr. S. McC. Hamill, of Philadelphia, asked Dr. Herrman if he implied that it would be a good thing to expose children under vve months of age to measles.

Dr. Herrman, in closing, said he had not said that it would be a good thing to expose children under five months of age to measles because one could not be absolutely sure that they would not contract the disease. He would not like to put himself on record as advising exposure of a child to an infectious disease. What he had brought out in his paper would explain why children from five to eight months of age had the disease in a mild form.

The Energy of Metabolism of a Cretin.—Dr. Fritz B. Talbot, of Boston, presented this study. He said that a typical cretin, three years and 8 months of age, was studied in the respiratory chamber devised by Benedict in the Laboratory of the Carnegie Institute at Washington. They found his basal metabolism per kilo body weight was 40½ calories per square meter body surface, 898 calories per 24 hours (Lissauer). In the absence of normal data in children of the same age, this metabolism was compared with that of a normal eight months' baby and a normal ten months' baby. It was found that the metabolism of the cretin was decidedly lower than that of the two normal babies. Unfortunately results after treatment with thyroid had not been sufficiently accurate to use. These results were consistent with those of Magnus Levy and the more recent work of Dubois in Lusk's Laboratory. The practical application of these findings was that the cretin required less food than children with sufficient thyroid activity and after treatment with thyroid extract would require more food than before treatment.

The Bacteriology of the Urine in Healthy Children and Those Suffering from Extraurinary Infection.—Dr. Henry F. Helmholtz, of Chicago, reviewed the various theories as to the mode of infection in pyelitis in children and said he thought a study of the bacteriology of the normal urine and urethra might throw some light on this problem. With this object in view he had examined catheterized specimens taken from thirty infants and from thirty-one girls over two years of age. The urine was collected by a very careful technique. It was found that in 119 specimens taken from 61 different individuals, 61 were sterile, and 58 contained bacteria. Of those from 24 normal infants 13 were sterile and 11 contained bacteria. In specimens from girls over two years of age 35 were sterile and 27 contained organisms. The number of bacteria found in the first series was considerably larger than in the second. This might be explained by the fact that in the older children one could cleanse the urethral orifice much easier and could introduce the catheter directly into the urethra. The bacterial flora was practically the same in both series, Gram positive staphylococci and pseudodiphtheriod organisms predominating; the former were present in practically every case in which any organisms were found. The writer concluded that it might be assumed on the evidence given that organisms of the colon group were not normal inhabitants of the female urethra and that in extra-urinary infections occurring in the first two years of life the colon bacilli were frequently found in the urethra, that was in about one-third of the cases. In girls over two years of age the urethra was almost free from organisms and entirely free from organisms of the colon group.

Orycephaly in Two Brothers.—Dr. W. W. Butterworth, of New Orleans, reviewed the literature of this subject and said the classical symptoms of oxysephaly were exopthalmos, pain, and some disturbance of vision. It was a rare occurrence to find this condition in two brothers with a history of a similar condition in the grandfather. These children were not mentally deficient. The condition had been variously attributed to ossification of the sutures, defective bone development, and a hydrocephalic condition in infancy. The X-ray pictures showed a mottling of the inner plate of the cranium and X-ray pictures of the other bones showed that enlargement of the condyles of the large bones was not unusual and that there was some enlargement of the bones of the face.

Meningitis in the New Born and in Infants under Three Months of age.—Dr. Henry Koplik, of New York, presented this communication. He said that meningitis in the new born might be secondary to general sepsis or it might occur as a primary infection. The symptomatology in the primary condition was very obscure. The signs by which meningitis was recognized in older children were not applicable to these babies. There was no rigidity, no bulging, no Babinski, and no condition of muscle clonus, so that it was not to be wondered at that the diagnosis was difficult to make. He had sought for some characteristic symptoms. He had found that the convulsions might be simple or there might be only slight twitchings of the extremities. Again, there might be only one convulsion with very high fever, 105 degrees F. or over, and the nthis might remit or subside. After the disease had lasted for a week or ten days the temperature came to a lower level and might run along at about 100 degrees F., or slightly above. Bulging of the fontanel was not present; in some cases there seemed to be a depression. Macewen's sign was very difficult to determine in new born babies. Some gave the signs of fluid in the head and some did not. It was only later in the disease after a week or ten days that one could get the signs of fluctuation, and the increase in the quantity of fluid could be detected by the bulging and by the tympanitic note over the temple. The trauma incident to difficult labors made the diagnosis more difficult in some instances. In some infants the disease was very severe and in some the symptoms were so mild that even the mother did not notice them until the child was two and one-half to three months old. The results of lumbar puncture in these cases was very interesting. In a series of twelve cases the streptococcus was isolated four times, the pneumococcus three times and the meningococcus three times; two were distinctly that the meningitis was secondary to arthritis. In the secondary cases the streptococcus was found in the blood. The other case which he had observed began with a pyelitis and later developed a colimeningitis as a secondary infection. The fate of these babies was disheartening; they were all fatal sooner or later. Only one out of the twelve was still alive and that one had a marked hydrocephalus. New-born babies did not bear lumbar puncture well. In discussing the modes by which infection might take place, Dr. Koplik suggested that during resuscitation by the suction method infection might be conveyed if the attendant was a meningitis carrier, and it might also be the result of trauma or of putting the fingers in the infant's mouth.

The Use of Salt Solution by the Bowel in Infants and Children.—Dr. Edwin E. Graham, of Philadelphia, presented this paper in which he said that his experience with the Murphy method of injecting saline solution by slow proctoclysis in certain conditions in children had let him to believe that it was of much more value to the pediatrist than most of them were aware of. In the acute infectious diseases toxemia might be greatly influenced by the employment of the Murphy drip. It was also of value in uremia and suppression of urine and generally speaking for toxemia from any cause, whether it was autointoxication, mineral poisoning, or septicemia. If nephritis with edema was present the administration of salt solution by this method was unwise, although in a few such cases it had apparently been employed with success. Dr. Graham said he had been greatly impressed by the results of the Murphy drip in profuse diarrhea due to intestinal infection. In employing this method there were several points to be observed: The catheter must be introduced 4 or 5 inches into the bowel; there must be a good return flow, and the water must be kept at a temperature of about 110 degrees F. The water should have a drop of about 12 inches. It was a good plan to allow it to flow for an hour and then allow the patient a rest of one hour. If slight edema made its appearance the treatment was to be discontinued. The solution should be carefully prepared; to say a teaspoonful of sodium chloride to a pint of water was exceedingly inaccurate.

A Case of Disseminated Sclerosis.—Drs. George N. Acker and Joseph S. Wall reported this case. Dr. Acker stated that the patient was a colored child 4½ years of age, who came to the out-patient department of the Children's Hospital on March 2, 1916, complaining of "nervousness." The family history was negative. The child's trouble had come on gradually and she had grown progressively worse. The chief symptoms presented were shaking of the body, nystagmus, exaggeration of all the reflexes, rapidity of pulse, but not enlargement of the heart. Ten days later her symptoms were aggravated and her mental condition seemed dulled. The drinking test gave rise to a typical volitional tremor. There were marked elbow and wrist jerks and ankle clonus was present in both extremities. The heat and cold sense were apparently normal except in the right thigh where there was some dissociation of the senses. The writers were of the opinion that the case fell into the category of disseminated sclerosis.

Dr. Joseph S. Wall, of Washington, reported on the present condition of the child which, he said, was, on the whole, changed but little from that recorded in the paper.

The Danger to Hospital Efficiency from Diphtheria Carriers.—Drs. Samuel S. Adams and Frank Leech, of Washington, D. C., made this contribution. They emphasized the point that there must be team work on the part of all connected with the hospital to the humblest employee. Among the numerous details that were requisite for the proper administration of a hospital it was important that every hospital have a well-trained medical superintendent who should have exclusive control over all matters connected with the hospital. The members of the medical staff should be medical men who had been promoted from dispensary work. Provision should be made for follow-up work, not only for the hospital, but for the out-patient department. Efficiency experts should be engaged from time to time to check up the work and criticise the same, from the president of the board of directors to the orderly. The writers then described a diphtheria epidemic in the hospital with whic they were connected which had greatly hampered the work of the hospital for a number of weeks. The occurrence of two cases of diphtheria led to a culture of every individual in the house with the result that 51 positive cultures were found out of a total of 100, including employees, nurses, and internes. The hospital wards were closed for a period of three weeks to the reception of new patients. At present they had reduced the number of positive cultures to seventeen. A search for the source of infection seemed to point to a nurse in the baby ward who had suffered from sore throat. There were twelve babies in this ward and eight gave positive cultures. To prevent the occurrence of such outbreaks they felt convinced that all institutions for the care of sick children should be provided with a suitable detention ward for the detention of all new admissions. Cases when admitted should have nose and throat cultures taken and be placed in the detention ward for five days. If it was impossible for financial reasons to provide a detention ward, cubicles should be provided in each ward and proper nursing technique carried out to prevent the dissemination of minor contagions. Illness in internes and nurses should be immediately attended to. Visitors to ward patients should be restricted to adults only, and such visitors admitted as infrequently as possible. Tests of the virulence of diphtheria carriers should be made, thus relieving ourselves at once of a large number of cases which it would be otherwise necessary to isolate.

RETROSPECT OF CURRENT PEDIATRIC LITERATURE

Relation of Migraine to the So-Called Acidosis of Children.—J. A. Lichty (Archives of Diagnosis, July, 1916) points out that a mistake is commonly made in interpreting periodical vomiting in children and infants as being attacks of "acidosis" when in reality they are precursors of a permanent tendency to migraine. In children with cyclic vomiting Lichty has nearly always found a hereditary history of migraine in one or more of the forebears. In some, in fact, he has witnessed the transformation from cyclic vomiting to typical "sick headaches." The term acidosis is not comprehensive enough to cover cyclic vomiting. It is only a symptom, which may arise in any case in which a period of starvation has been gone through. Thus in cyclic vomiting of children with the usual acetonuria, the acetone, with the acidosis it betokens, is not the cause of the condition, but merely a result. In addition to seeing eight or nine cases of cyclic vomiting, later called acidosis, and finally passing into fully developed attacks of migraine, the author has obtained every now and then, among seven hundred cases of migraine, a history of bilious attacks with obstinate vomiting in childhood and migraine coming on at puberty.

Scientific Infant Feeding.—Scientific infant feeding during the past six years has made progress with leaps and bounds. While the monumental work of Rotch has crumbled to the ground, his life work has made a hurculean impression on the whole subject. His writings have stimulated an army of investigators in this very vital subject and as a consequence we see results of a very tangible nature. From his complicated percentage system of infant feeding we have seen gradually evolved a system which is characterized by its great simplicity. An endeavor to make cow's milk resemble mother's milk is today anachronistic. Cow fat and cow protein will always be what they are and their biological nature is facile princeps our difficulty and cannot be changed. Today we see the most scientific infant feeder prescribing dilutions of whole milk with the additions of a well cooked cereal and one of the disaccharides to supply the infant's organism with sufficient calories. From studies of nutrition we know just how many calories the infant's organism can tolerate. An oversupply of these calories can damage our boiler; similarly a paucity of heat units over an extended period can see our flame go out. The different influences which place a burden on the infant's organism have been studied and taken cognizance of in our prescribing. Ignoring the baneful influences of heat and excess of clothes will jeopardize the life of our infant.

The therapeutic value of casein is well recognized and frequently taken advantage of. Because starch is not a constituent of breast milk is no reason today for keeping starch out of the diet of the young infant provided it is well cooked. The numerous methods advised to prevent the firm coagulation of cow's milk in the stomach have given way to the simple expedient of boiling the milk. Cow fat can be digested but at times it may be necessary to keep it entirely out of the diet. Its constipating effect owing to its formation of soap in the bowel of the infant is one of the paradoxes we must reckon with; a similar one is its effect to depress the weight curve owing to its abstraction of mineral salts.

The student of today is no longer required to wrestle with algebraic formulas in order to acquire a knowledge of scientific infant feeding.—Jour. Mo. State Med. Asso., Sept., 1916.

Treatment of Infantile Convulsions.—Clifford C. Grulee (Texas State Journal of Medicine, October, 1916) uses an anesthetic in extreme cases to control the convulsions. He prefers chloral hydrate given in an initial dose of from two to five grains, followed by one to two grains every four hours. It is given well diluted, and into the rectum, the buttocks being held together to prevent expulsion. Fifteen grains of calcium lactate given by mouth every four hours prove beneficial. The diet should consist of foods which are low in sodium and potassium salts. To promote the absorption and retention of calcium, it is well to give codliver oil and phosphorus, one half teaspoonful to one teaspoonful three times a day.

Treatment of Acute Anterior Poliomyelitis.—Louis Fischer (American Medicine, Sept., 1916- reports a series of twenty-five cases, only one of which was fatal. These cases were treated with intraspinal injections of convalescent human serum. The dose administered was from ten to fifteen c. c. Before injecting the serum about fifteen to thirty c. c. of spinal fluid was withdrawn. In cases where the fluid was under great pressure from forty-five to sixty c. c. were taken off. One injection of the serum usually proved sufficient, although the dose was at times repeated after twenty-four hours. The injections were followed by severe febrile reactions. Nausea and vomiting may develop. Excellent results were obtained with intraspinal salt irrigations at a temperature of 105 degrees to 106 degrees F. In order to induce sleep, three to five grains of chloral hydrate should be used.

Tuberculous Skin Lesions.—Northrup (Arch. Pediat., 1915, xxxii, 887) reports a tuberculous skin eruption in a child of fifteen months. Three similar cases were reported previously. This condition is rather rare in the very young and Tileston concludes it occurs only in fatal cases as a terminal event. The case in point had tuberculous meningitis and pulmonary tuberculosis besides the skin lesions. There was a history of tuberculosis in the mother and a brother. The history shows progressive wasting for six months. The lymphatic glands of the neck, axilla and inguinal region were moderately enlarged. The skin eruption was mostly on the trunk, especially on the back, some on the face and forearm. The character of the lesions was papulopustular and umbilicated, and while showing no tubercle bacilli on microscopic examination, was diagnosed as a tuberculide of the skin with some secondary infection. There were tubercles in the lymph nodes and subcutaneous tissue, the lungs, meninges, and intestines. While no bacilli were found in the sputum, glands or skin lesions, the Roentgen-ray showed miliary tuberculosis of the lungs. The physical signs in the chest had been inconclusive. This exemplifies the important bearing the Roentgen-ray has on diseased conditions, especially in children. While localized tuberculosis is common, disseminated tuberculous eruption of the skin, necrotic tuberculid, is rare in infancy.

Macewen's Sign in Intracranial Pressure.—Wilcox (Arch. Pediat. 1915, xxxii, 909) offers an interesting elucidation of Macewen's sign in changes and intracranial pressure and illustrates the practical application of this change of note. Different normal percussion notes belong to varying ages, with their corresponding states of skull development. Disease influences the character of skull percussion, rickets being the best example of this. A rachitic skull at six years will give a percussion note similar to that found normally in an infant of six months. If this case develops increased spinal fluid a sharp, high-pitched, clear note is at once found to have replaced the former full, low-pitched, non-resonant percussion. If the cranial walls are too thin no note will be produced even though intracranial pressure be high. Macewen's sign is best determined by the stethoscope placed on the forehead just above the base of the nose. The skull is tapped directly with the percussing finger or hammer over the parietal region, beginning just over the parietal boss, from which the finger approaches the stethoscope. This should be carried out on both sides of the head. The typical sign observed in this way consists of a high-pitched, sharp, short, cracked-pot note. It is most distinct over and around the parietal boss and diminishes toward the stethoscope, while the reverse obtains in a normal skull where the note is heard more loudly as one approaches the stethoscope. The cracked-pot note of Macewen should be considered as a relative variation from the normal and not as a definite entity. When this sign is positive and cerebral fluid under pressure is withdrawn in the usual amount the note goes back to more nearly the normal almost at once. The sign was present in 50 of 53 cases of tuberculous meningitis and 17 of 18 cases of meniningitis of other types. It was present in all of 5 cases of poliomyelitis. It was found to vary directly with the development and recession of cerebral symptoms as complications of disease not directly affecting the central nervous system. The sign is uniformly lacking in children normal as to the brain and its coverings.

Child Weighing Twenty-five Pounds at Birth.—D. P. Belcher (Jour. A. M. A., September 23, 1916) reports a child born at term, which weighed twenty-five pounds, measured twelve inches across the shoulders, and was twenty-eight inches long. The child was dead at birth. The mother was a multipara, thirty-five years old, five feet seven inches tall, and weighed 220 pounds. Labor was difficult and prolonged and special trouble was encountered in the delivery of the shoulders. There was only slight perineal laceration. The child was a girl.

Disturbances of Digestion in Infancy.—John Lovett Morse (New York State Jour. of Med., 1916, xvi, 54) classifies the diseases of the gastro-enteric tract into nervous disturbances of the digestive tract, disturbances of digestion and infections. The first condition is caused by irritable or exhausted nerve centers causing vomiting and diarrhea. The second condition may be caused by an excess either in one food element or in the bulk of food, or by diseases or extraneous conditions diminishing the digestive powers. Indigestion with fermentation may develop from disturbances of the normal process of digestion or primarily from excessive bacteria introduced into the intestine. There are marked pathological lesions in this condition as there are in infectious diarrhea. In indigestion caused by too much or too rich a food, the amount or strength of the food should be cut down to a point lower than the normal baby of that age would be taking, and then raised carefully to the point of tolerance again when the disturbance has disappeared. The point of tolerance is best determined by examination of the stools. When individual food elements are cut down the other elements must carefully be raised to keep up the caloric value. In the case of sugar another sugar may be substituted. In protein excess regulation of the mother's life, or in the bottle-fed cases, diminishing the casein percentage, boiling the milk, addition of alkalies or citrate of sodium and pancreatization may be employed. Drugs are of little or no use in simple indigestion. Cleaning out the bowel with castor oil and by the use of enemata is an important part of the treatment. Indigestion with fermentation may be caused by the butyris acid bacilli, the colon bacillus, and even the normal lactic acid forming organisms. It is more serious than simple indigestion, more often acute and accompanied by fever. Vomiting is uncommon while diarrhea is marked. Usually the carbohydrates and less often the fats are acted on, causing the fermentation. Lactic acid bacilli are indicated in the treatment where the carbohydrates are selected by the attacking organisms, and may be given in broth cultures or in modified milk ripened by them. They are also indicated in the proteolytic type of condition. In the carbohydrate type this element should be cut down and vice versa. Symptoms indicating a possible fatal outcome are excessive vomiting, hyperpyrexia, irritation of the central nevrous system and collapse.

Influences of Syphilis on the Chances of Progeny.—M. Bishop Horman (British Med. Jour., 1916, No. 2875, p. 196) in investigating the causes of blindness in 1100 children also collected the family history in 150 families. In all of these families one or more children were undoubted sufferers from congenital or inherited syphilis. Besides the state of blindness there were other indubitable signs of syphilis in Hutchinsonian teeth, characteristic physiognomy, scars, bone and joint disease, deafness, etc. Whatever the evidential value of blood tests for syphilis there is certainty in this evidence presented by the finding of these other clinical features. Hutchinsonian teeth alone give certainty and association of this form if teeth with one or more of these other clinical characters provides a superabundancy of certainty. In the 150 families above referred to, 68.5 per cent Hutchinsonian teeth were present in the blind child of the family. Where evidence of the teeth was lacking there were other symptoms in sufficient nhmber to explain the blindness. Compared to the 150 syphilitic families a second series of 150 families were studied in which the women were not syphilitics or the prognitors of syphilitic children. The results of fertilizatiin of these two series of women show that 150 syphilitic mothers had 1001 pregnancies, but of these only 390 resulted in healthy children, while the 150 healthy mothers had 826 pregnancies which resulted in 654 healthy children. There were 92 miscarriages per 1000 among the syphilitic series against 73 among the healthy, and 80 stillbirths per 1000 among the syphilitic against. 20.5 per cent. among the healthy women. These figures speak sufficiently of the influence of parental syphilis on the chances of healthy progeny.

Prolonged Hyperpyrexia in a Child with a Mid-Brain Tumor.—C. Violet Turner (British Journal of Children's Diseases, Sept., 1916) calls attention to the case because of the duration of the hyperpyrexia. High fever is seen commonly as the terminal manifestation of cerebral lesions in children, and extreme variations of temperature are also noted in meningococcal meningitis, middle ear disease, and other infectious intracranial conditions. For ten days the temperature would reach 105 degrees to 107 degrees F., once or twice every twenty-four hours and then fall to subnormal within eight ti twelve hours. The highest temperature recorded was 109 degrees F. axillary and 111 degrees F. rectal. Four hours after this temperature was recorded it had fallen to 100 degrees F., and in eight hours it was subnormal. The rises occurred most frequently at 11 p. m., but this was not constant. The pulse varied with the temperature. The respiration rate also showed corresponding variations, and just before the patient died the respiration was of the Cheyne-Stokes variety. After death a solid rounded tumor was found situated in the midline in the region if the corpora quadrigemia. Microscopically the tumor consisted of numbers of round cells, uniform in size, with but little intercellular matrix. In parts the growth had undergone cystic degeneration, leaving a hyaline material without cell elements.

Case Fatality and Crippling from Poliomyelitis.—A report issued by the Department of Health of the City of New York shows that the total number of cases of suspected poliomyelitis put under quarantine by the board up to October 11th, was 9,177; of these 250 were found, after careful clinical study at the hospital, not to be cases of poliomyelitis, and were deducted, leaving a total of 8,927 true cases. The total number of deaths recorded by the department was 2, 343, a fatality of 26.24 per cent. ,,

Cases may properly be divided into three classes, as follows. Those treated in the hospitals of the department of health, 4,474; total number of deaths, 653; case fatality, 14.59 per cent. Cases admitted to twenty-seven other hospitals in the city, 2,663; total number of deaths, 387; case fatality, 14.53 per cent. Cases in the home, 2,040, which may properly be subdivided into: Those left at home because home conditions were adequate for isolation, those which were too severe to be removed, and those not reported to the department until the death certificate was presented. Total number of deaths, 1,303; case fatality, 63.87 per cent. The high percentage of fatality in this group is mainly due to the fact that the major portion of the cases comprised in it were of the severest type.

From August 21st to October 13th there were discharged from the hospitals of the department 2,058 cases; of these 66 per cent showed evidences of paralysis of some degree, 18 per cent showed that paralysis had wholly disappeared, 15 per cent had not shown paralysis at any time in the course of the disease. Of 2,715 cases followed up carefully in the homes, it has been found that 1,885 have a serious paralysis of one or both lower limbs and are unable to walk: 530 more were partially paralyzed in the lower limbs, although still able to walk; 273 had one or both arms totally paralyzed. Judging from the cases already visited by the agents of the relief societies operating under the Committee on Aftercare, between seventy-five and eighty per cent of the cases with persistent paralysis will fall in the class of people who usually obtain medical services free.

Administration of Diphtheria Antitoxin. Safety First.—Louis Weiss (Medical Review of Reviews, September, 1916) urges that this is an important procedure, to be prepared for and carried out with infinite care. The history should be ascertained, and the present condition of the patient carefully noted, with especial attention to the heart. The patient should always be in the recumbent position, no matter what the age, in order that the work of the heart may be as light as possible. Cleanse the skin of the part selected with ordinary hand soap, or tincture of green soap, or lysol in solution, and paint with tincture of iodine. Cleanse your own hands. The antitoxin outfit comes to you sterilized. Pinch up the skin and introduce the needle through the iodine stained area. With the syringe in one hand ready for action, feel the pulse with the fingers of the other hand, or with the stethoscope over the heart. Inject drop by drop, slowly and carefully. If the heart continues as before or improves, continue the injection until finished, but if the heart shows a tendency from normal, or grows worse in any way, remove the needle at once. The pulse shows the first sign of danger, which is detected easily. If the pulse is overlooked and the injection continued, other symptoms may follow: A temporary stoppage of respiration, a blank stare, an anemic, shrunken face, beads of cold perspiration on the forehead, dropping of the arms and head to one side, and collapse. Such an experience does not occur if the slow, careful, watchful, drop by drop method is followed with the patient in the recumbent position.

Vaccine Treatment of Whooping Cough.—Charles James Bloom (New Orleans Medical and Surgical Journal, September, 1916) states that the treatment of pertussis by vaccine is most efficient provided the procedure followed is correct. Give a large initial dose, not less than 120,000,000, increase 60,000,000 for each succeeding dose, and give the maximum quantity every other day until one of the marked symptoms shows an appreciable improvement. Continue every three or four days until the patient is cured. Vaccine produces no reaction, it reduces the duration of an attack to an average of twenty-eight days, the loss of weight is minimum, the intensity and number of coughing spells become less after three injections have been given, vomiting ceases after six injections, sleep is not disturbed after from five to twelve days, and no complications were observed by the writer in thirteen cases after observation ranging from eight to twelve months.

BOOK REVIEWS

Diseases of Children.—By Edwin E. Graham, M.D., Professor of Diseases of Children, Jefferson Medical College, Philadelphia; Pediatrist to the Jefferson Hospital and to the Philadelphia Hospital; Consulting Pediatrist to the Training School for Feeble-minded, Vineland, N. J.; Member of the American Pediatric Society, Etc. Octavo, 902 pages, with 89 engravings and 4 plates. Cloth, $6.00 net. Lea & Febiger, Publishers, Philadelphia and New York, 1916.

In the preparation of this work the aim of the author has been to make it represent the most modern views upon each subject discussed, and to present these views in such a way that they may be immediately available to the busy practitioner as well as perfectly clear to the medical student. In the discussion of treatment no details have been overlooked, and the physician engaged in general practice may find herein the precise management of a typical case of any disease which he is called upon to treat. Infant Mortality, Heredity, and Environment, so interesting and important from the standpoint of the pediatrist, Frish Air in the Treatment of the Healthy and Sick Child, and Puberty, have been thoroughly discussed in separate chapters specially devoted to the subjects.

The subject of Infant Feeding has received particular attention; the preparation of milk mixtures, usually a vague subject to both the general practitioner and the student, is carefully explained, and the calculation of caloric and percentage feeding has been illustrated by formulas reduced to ounces. Diseases of the Gastro-Intestinal Tract have been presented in full, and some of the most advanced ideas concerning diagnosis and treatment have been incorporated. Food Injuries, Chronic Constipation, Pylorospasm, and Pyloric Stenosis have received special consideration, a careful differentiation being made between the two latter affections.

A whole chapter is devoted to Diseases of the Liver, while Diseases of the Spleen are fully discussed, and enlargement of these two organs, a common condition in children, is carefully considered. In the chapter on Diseases of the Skin the aim has been to suggest for the most important skin lesions such therapy as is applicable to children. A special chapter has been devoted to Dentition, the author regarding this as a normal and physiological process in the course of normal development. Particular attention is also called to the articles on Influenza, Pertussis, Anterior Poliomyelitis, and Enlargement of the Thymus Gland.

The subject matter is presented in an instructive and interesting manner and at the same time from an extremely practical standpoint. It is a splendid contribution to pediatric literature in which will be found the latest and most approved teaching on the subject. It is a book we have great pleasure in calling attention to, and one we can highly recommend to the student, general practitioner and pediatrician.

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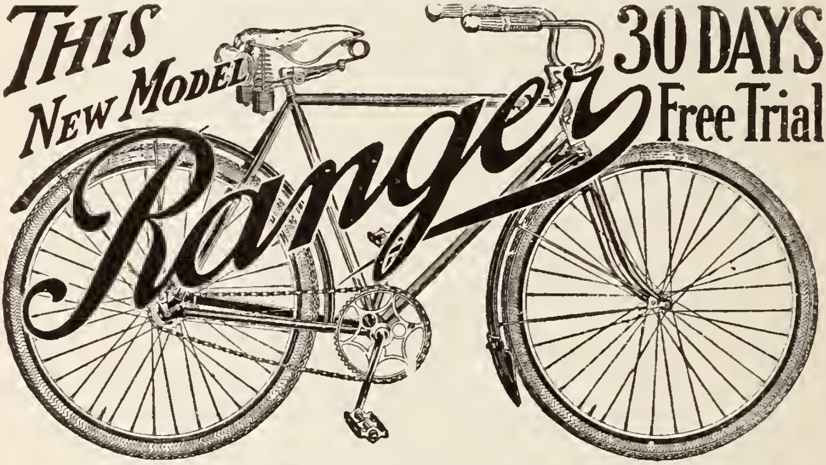

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PEDIATRICS

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EDITORIAL

HUMAN HYBRIDIZATION

It is likely, according to some scientific men, that the several human races which inhabit the globe, shall, in course of time, fuse into one great hybrid race. Maynard M. Metcalf of the Orchard Laboratory, Oberlin, Ohio, Journal of Heredity, is a believer in this kind of amalgamation, and is of the opinion that it will come sooner than most people imagine. He holds that the main reason why it has not come about more quickly is because the various races have been more or less isolated. However, such isolation is being rapidly overcome and we are approaching the time when every man may fairly be called every other man's neighbor. Easy and swift means of communication are breaking down the bars of isolation, and of social prejudice, and are tending to render the world's population one great cosmopolitan family.

It is pointed out in Mr. Metcalf's paper, that both processes, extinction and fusion, have been taking place in America's short history, and with such rapidity that they can actually be observed. The manner in which the Jew is intermarrying amongst natives of the countries in which he lives is regarded by the writer as the most conspicuous example of this fusion of races. Attention is further drawn to the fact that each Jew more closely resembles his local neighbor than he resembles his brother Jew of another country and thus blending has come about in spite of a social ostracism of centuries more rigorous than we of to-day, especially Americans, can adequately conceive.

Mr. Metcalf allows that time is of no account with the biologist, and that consequently the amalgamation of the races of man into one race about as hemogeneous as the present

European population will take a few thousand years to accomplish. At the same time, in his opinion, it is inevitable.

Whether such prognostications be right or wrong or only partly right is a matter of speculation more or less, which only time can decide. Perhaps to the ordinary observer fusion of races is not proceeding at nearly so rapid a rate as Mr. Metcalf appears to believe. Be this as it may, the subject is a fascinating one upon which to muse and to endeavor to foresee the outcome of an amalgamation of all the races of the earth.

A mongrel race is usually a strong, virile race and most of the conquering peoples have been of mixed origin. But these races have been a mixture or blending of white persons and not a miscegenation—which is a very different matter. It used to be the belief that when a negro mated with a white person the offspring was apt to inherit the bad qualities of both parents. This view was well expressed by an African chief with whom the great traveler Livingstone was chatting. The conversation veered to miscegenation. The chief bluntly said that in his opinion, God made the pure black and the pure white, but that the devil made the mulatto. Kipling has also sung that the East and West can never blend. Nevertheless, these views may be colored by some prejudice. Scientific research has shown with sufficient clearness that from the physical aspect the blending is perfect and often almost equal, and as such is transmitted to the latest descendants. When the negro, for instance, crosses with one of the white race, the offspring, the mulatto, is conspicuously a blend in all except eye color. His hair, it is true, more nearly resembles in texture the African than the Caucasian type, but proof of blending is furnished by the fact that continued infusion of white blood in succeeding generations results in a gradual change of type till, at last, the hair loses all trace of wooliness.

But in miscegenation it is not the physical attributes that are of the greatest consequence but the mental. What would it profit if by crossing the white and black or white and yellow, a splendid race physically was evolved but which from the mental and moral standpoints was vicious and cunning. Indeed, such an outcome would be a disaster. So far as we know, it is for the good of the race that different varieties of white stock should cross. It may be mainly by the constant infusion of healthy immigrant blood that in this country the race is kept vigorous mentally and physically. But that the white and black and yellow races should interbreed on a large scale and that this is to the advantage of the race, as a whole, is contrary to all accepted teachings. Moreover, it appears to be a harmful doctrine to propagate.

CODDLING OF CHILDREN AND THE INFECTIOUSNESS OF COLDS

The crusade now being undertaken against tuberculosis has clearly brought to the minds of every one that the only intelligent treatment of the disease is by means of fresh, pure air, and a good diet. In all parts of the world, sanitariums, conducted on those principles, are springing up, and even in England where one would think that the climate was hardly suitable for the out-of-door treatment, the system is being carried out on a large scale. But, after all, it should be remembered if proper care is taken of children, when young, and if their bringing up is carried out more with the view of hardening them, and thus rendering them proof against the ubiquitous microbe, the need of sanitariums would be much less than is at present the case. It is a fact, both instructive and pertinent, that in many of the coldest portions of the globe, colds are unknown. Nansen and his men, when in the Arctic regions, although they underwent exposure of every description, never once suffered from colds, but no sooner had they set foot on their native shore of Norway, than they, one and all, caught severe colds. The experience of other Arctic explorers is the same. It seems then, probable, that there may be something in the theory of the infectiousness of colds, and that we shall have to give up our traditional belief to the contrary, however much we may have treasured it. It the infection theory be the true one, and if it be frankly accepted, a radical change in the method of treating colds must necessarily follow. If exposure is not the direct cause, but merely acts by so lowering the vitality that the germs can gain an easy foothold, the radical treatment must be to build up and harden the constitution in such a manner that it will refuse to harbor the seeds of disease. Mothers and nurses are too much afraid of fresh air and ventilation, but when the understand that the hot house plan of rearing children will produce a nation of weakly, delicate individuals, susceptible to every complaint that is about, they will doubtless see the error of their ways.

THE CLOSE OF ANOTHER VOLUME

With the present issue, the last for 1916, Pediatrics completes its 28th volume, and in so doing the management takes this occasion to extend its thanks to the profession and looks back with pardonable pride upon the year that has passed. Never before in its long career has it been able to publish such a large number of original articles—contributions to medical science of which any journal might well be proud.

For the future there is even more brilliant promise of greater success and no effort will be spared to make Pediatrics in all respects, a practical, helpful journal to every doctor who is called upon to prescribe for and alleviate the ills of infancy and childhood. During the past year a great deal of time, energy, money and gray matter has been expended on Pediatrics, striving to make it worthy of the attention of the leading Metropolitan pediatrician and the general practitioner, whether his field lies in the city or the rural districts and from the encouragement received, we have every reason to believe that we have not labored in vain.

We trust our readers have been pleased with what has been placed before them month after month, and that they will continue to assist in the scientific uplift of Pediatrics. We hope that each of our satisfied subscribers will not let an occasion pass to say a good word for Pediatrics to their medical friends Pediatrics stands wholly upon its merits and there can be little question that there are thousands of doctors who would like to subscribe if their attention was once called to its value. Such effort would be equally advantageous to all concerned for it is a self evident fact that the larger a clientele upon which a publication depends for pecuniary support, as well as for scientific contributions, the more attractive and valuable in every way it can be made. The editor desires to extend his thanks alike to the subscription and advertising patrons and to wish them, one and all, the season's compliments, a Merry Christmas and a prosperous New Year, with many returns.

PEDIATRICS

ORIGINAL ARTICLES

RABIES: REPORT OF A CASE*

BY ALBRO L. PARSONS, M.D.
Louisville, Ky.

I may be criticized for reporting the following case, because of my inability to offer pathologic and bacteriologic evidence in support of my opinion that it was one of rabies.

On February 25th, 1916, a male child, aged about five years, was brought to my office by a policeman who had seen the child fall on the street after being approached by a large dog. The policeman did not know whether or not the child had been bitten, but noted that there was a small wound over the right eye. I did not happen to be in my office at the time, and did not see the child until one month later. About two hours after the injury the little patient was taken to the office of Dr. Taylor, who cleansed the wound with peroxide of hydrogen and applied a proper dressing. Slight suppuration ensued, but the wound finally healed.

The next information received was that on March 25th, or one month after the injury, the child was taken ill with what was thought to be a bad cold, that his throat was inflamed and there was a nasal discharge. The mother communicated with Dr. Taylor, who advised her to give the child some salicylate of soda and calomel. As there was no improvement the following day, Dr. Taylor called at the house to see the patient. There had recently been a case of diphtheria in the family, and the mother feared this child might have that disease. Examination showed no membrane in the throat although there was considerable soreness. At this time Dr. Taylor made the diagnosis of "hydrophobia." The child had been bitten by a dog, he was intensely nervous, the throat was sore and there was some pain due to spasm of the throat muscles, and the doctor said he could not account for the symptoms in any other way—hence his diagnosis.

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*Clinical Report before the Society of Physicians and Surgeons, of Louisville, Ky. For Discussion see Society Transactions, page 553.

The next night about twelve o'clock I was called and found the child apparently in a very desperate condition. His cries were sharp and hysterical; the father was holding the child on his lap and his face, arms and hands had been severely scratched or bitten by the little patient. The child was uttering a peculiar cry, and showed evidence of intense excitement and pain; the face was flushed except the central portion which was chalky white; the pupils were equally dilated to an extreme degree; the body was covered with perspiration; every now and then without apparent reason the child's foot would "kick out"—but when told to hold himself still he could do so; his hands and fingers were constantly twitching; he had pinched or bitten the father's arms until there were subcutaneous hemorrhages; his head was lolling around, the lower jaw fully extended and moving back and forth; the tongue was revolving in the mouth and when forcibly withdrawn a heavy, thick, ropy mucus came from the mouth.

Knowing that the child had been bitten by a dog, of course I thought of rabies, although the case impressed me then as being one of hysteria. I took the mother to one side and accused her of talking "mad dog" to the child; this she denied and said they had not mentioned the matter in the month which had elapsed. When I felt the child's pulse it was realized that there was something more serious than hysteria; the pulse rate was over 150 to the minute, and a marked embryocardia was noted. I immediately communicated with Dr. Taylor over the telephone and told him I agreed in the diagnosis he had made. I then visited the city health department to procure some anti-rabic serum. At the health office I met Dr. Eisenman, who has had a rather extensive experience with animal "hydrophobia," and also Dr. MacCormack of the State Board of Health, and they kindly consented to see the case with me. Dr. MacCormack had seen one case of rabies, so proven by the microscope, i.e., if any reliance can be placed on the presence of the Negri bodies. Dr. Curry who saw the case of rabies with Dr. MacCormack was also present. All these gentlemen went with me to see the little patient and concurred in the diagnosis. The child fought against taking water, holding his lips tightly compressed the water trickling out of his mouth. When a small quantity of water was forced into his mouth we could see the throat muscles contract, so he could not possibly swallow.

The last time I saw the patient, twelve hours after my first visit, he had vomited and had relaxed to such extent that on one occasion the mother reported he had swallowed some water. At all other times an effort to swallow induced complete contraction of the muscles of deglutition. The child was then breathing in a peculiar way with a sighing respiration, which DaCosta describes as like a child breathing just after he has finished crying, the accessory muscles of respiration working all the time.

The child died about fifteen hours after my first visit, or one month and four days after the injury. The parents stated that three days before I was called there had been considerable redness and swelling about the wound over the eye. There was none however, at the time I saw him, it was simply an ordinary small red scar. We asked for a necropsy, but the parents refused. The dog was never seen after the injury, and of course could not be examined.

I have no means of proving that this was a case of rabies, but if not it certainly corresponds closely to the descriptions in the text books of that disease. I am sorry we did not have an opportunity to make a post-mortem examination.

MENTAL EXAMINATIONS OF SCHOOL CHILDREN*

The School as a Factor in the Mental Hygiene of Rural Communities

BY TALLIAFERRO CLARK
Surgeon, United States Public Health Service

In the course of investigations of school hygiene by the United States Public Health Service during the past year and a half, mental examinations have been made of over 18,000 school children in four States. As nearly all of the children examined resided in rural districts, these studies relate more particularly to the rural school child.

Retardation.—The problem of mental hygiene observed, while closely related to those existing in urban communities, present distinct characteristics. The most outstanding of these problems are those connected with the large number of mentally retarded children observed.

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*Read before the Section on Feeble-mindedness and Insanity, National Conference of Charities and Corrections, Indianapolis, Ind., May 15, 1916. Reprint from the Public Health Reports, vol. 31, No. 34, Aug. 25, 1916, pp. 2265-2271.

While all the collected data bearing on mental retardation have not been compiled, the studies being still in progress, compilations have been made in the case of the rural school population of one entire county. The average attendance in the rural schools of this county was 2,512. The number of children who were examined mentally was 2,185. The results of these examinations, therefore, should be representative of the district in question. Of these 2,185 children, 8.7 per cent were retarded as follows: Children of 6 and 7 years of age, retarded two years; 8 and 9 years of age, two and three years; 10 and 11 years of age, three and four years; 14 and 15 years of age five years; and 16 to 17 years of age, retarded six years mentally.

The average retardation of these children in school work as graded by teachers was 1.28 years for girls and 1.5 years for boys. In other words, the total retardation in school work amounted to 268.27 school years.

Furthermore, intensive studies were made of the physical condition and school environment of these children. The following physical defects were recorded: Of the retarded girls, 35.5 per cent were under-sized, 58.8 per cent had noticeable visual defects, 26.4 per cent had defects of hearing, 17.6 per cent had two or more defective teeth, 2.9 per cent had enlarged tonsils, and an additional 1.7 per cent had enlarged tonsils associated with adenoids.

Of the boys, 38 per cent were under-sized, 47 per cent had noticeable defects of vision (of which number 19 had confused color sense), 34 per cent had defective hearing, 17 per cent had defective teeth, and 6 per cent had adenoids and enlarged tonsils.

These children were not feeble-minded. A clear distinction must be made between these two conditions for a proper appreciation of the role of retardation in mental deficiency. The rate of intellectual development varies at different age periods. In very young children the rate is relatively rapid. In fact, it can easily be observed without special methods. As the child grows older, however, the progress of intellectual development from year to year is less easily detected, so that between the ages of 12 and 13 it can not be recognized. In the case of older children therefore, the correlation of retardation and permanent mental deficiency is relatively easy. In other words, the greater the discrepancy obtaining between the chronological and actual mental ages, the more definitely it may be asserted that the child is feeble-minded and that his intelligence will never be greater than that of a child when he becomes an adult. This is due to the improbability that a great amount of retardation will be overcome in a short time intervening before maturity and at a lessened rate of mental progress.

In the case of very young children, however, one or two things may take place. First, the retardation may be temporary only The annual increments of intellectual development may be so great as to overcome the retardation in the longer period which must elapse before maturity. On the other hand, mental development may remain stationary or develop so slowly that the individual still presents the mentality of a child when the adult stage is reached.

Rural children are exposed to influences causing retardation that are quite distinct from those affecting children in urban communities. Broadly speaking, these influences may be considered from the standpoint of (1) sanitation and (2) education.

(1) School surveys have shown that 12 per cent of the population in certain sections of our country is afflicted with trachoma The amount of mental retardation observed in these sections is very great, due to the fact that the damage to vision caused by this disease hampers intellectual training.

It is known that there are many thousands of people suffering from hookworm disease in this country. It is common experience that children suffering from hookworm infection show evidences of mental retardation.

Furthermore, mental retardation is frequently associated with certain nutritional disorders. Of particular interest in this connection is pellegra, which is a nutritional disorder due to an improperly arranged dietary. It is estimated that there are 75,000 people in this country who are suffering from pellagra a large proportion of whom are children. Not only is this disease associated with mental retardation, but from 4 to 10 per cent of pellagrins eventually become insane.

Finally, certain physical defects, especially those involving the organs of sight and hearing, operate to cause retardation. Failure to provide for the health supervision of the school children which is so common in rural communities, is largely responsible for the continuance of a number of these defects, which react injuriously on mental functioning.

(2) Of the educational influences operating to cause mental retardation may be mentioned the school environment, the sanitation of the school building, the arrangement and equipment of class rooms, the maintenance of too large a number of children in different grades in one-room schools, and faulty teaching methods.

Eighty-nine per cent of the rural schools inspected in the county previously referred to were one-story structures, and 57 per cent were more than 20 years old. Adjustable desks were found in only 9:5 per cent of the classrooms, 41.1 per cent of the classrooms were heated by closed stoves, 27.6 per cent were without aids to ventilation, and the illumination was from the right direction in only 42.2 per cent.

Finally, retardation is itself a cause of retardation. The home environment and the mental attitude of parents who are themselves retarded are potent factors in the mental retardation of their children. Furthermore, the presence of a number of retarded children in a class exerts a hampering effect on the mental advancement of the class as a whole. This condition is very common in rural schools, due to the absence of facilities for the formation of special classes for the training of children in need of individualized instruction.

Mention has been made of the numbers of retarded individuals observed in communities where certain endemic diseases and nutritional disorders are common. When a child retarded by hookworm disease has been cured, he has promptly passed to higher grade. Again, instances are not lacking to show that the longer the infection persists in these cases the more permanent the effects of retardation are likely to be from the standpoint of both physical and mental development. It is clear, therefore, that constitutional conditions operating to produce mental retardation, unless removed, may finally bring about permanent mental impairment.

Of more general interest, however, because of the more extended field of operation, is the role of retardation from causes not clearly understood in inducing feeble-mindedness. The investigations of Holley show that the tendency is for men and women to marry those who are approximately of the same educational level. The inter-marriage of men and women who have become discouraged through retardation and have quit school with but meagre educational attainments is quite common. The poor judgment so noticeable in individuals of this type, the weakened will, and the ready yielding to desires frequently bring about unfortunate marriage selections, the formation of vicious and intemperate habits, and increase in venereal affections, influences that are largely responsible for social and economic conditions provocative of feeble-mindedness.

Feeble-mindedness.—The percentage of feeble-minded persons in the general population is not known. It has been placed as high as 4 per cent by some observers. In this respect each community is a problem in itself. This is because of the modification of hereditary and environmental influences by immigration and geographical location.

The percentage of feeble-mindedness observed in the course of the investigations of the Public Health Service varied from 0.3 to 1.1 per cent, according to locality. Under-physical development was not found frequently associated with exceptional retardation—feeble-mindedness. In the case of feeble-minded, 57 per cent of the girls and 42.8 per cent of the boys were above the average physical development determined for the county Furthermore, 42.8 per cent of the girls had visual defects. 14.2 per cent had defects of hearing, and 2.9 per cent had enlarged tonsils. Of the boys, 34.2 per cent had visual defects, 57.1 per cent defects of hearing, and 7.1 per cent enlarged tonsils. These observations seem more in accord with what might be expected in the case of feeble-minded children. It is natural to suppose that these children simply vegetate—i.e grow rapidly in a fairly good environment.

Constitutional Inferiority.—A boy was observed in a rural school who was noisy, vain, said to be cruel to animals, inclined to impose on younger children, and given to lying and petty pilfering. Children of this type are termed by psychologists "constitutionally inferior" and are of average intelligence. Quite early in life, however, they give evidences of a perverted moral sense that makes them potential criminals in a bad environment. The number of such children found in any one community is not large; nevertheless, they are found in numbers sufficient to make them a serious problem from an educational and sociological standpoint. Especially is this true of rural communities where compulsory school attendance is required by law but where no provision is made for the care and training of defective children.

Owing to the tendency to imitation exhibited by young children, the compulsory school attendance of the constitutionally inferior is a menace to the morality of the community far greater than seems to be warranted by their number. The presence of such children in the general classes is undesirable, yet it is unwise to throw them back on the community without the hope of future training or restraint. To do so will but crystallize vicious tendencies which make of them a menace to society. The school offers that ready opportunity for the early recognition of children of this type which is so desirable for the successful application of necessary training methods.

Insanity and Epilepsy.—During our investigations several insane children and a number of others with a marked psychopathic tendency have been noted. The occurrence of insanity in children has received but little recognition until within comparatively recent years. The early recognition of psychopathic tendencies is of vast importance from the standpoint of mental hygiene. It must be remembered that children who exhibit these tendencies have sick minds, just as other children have sick bodies, which require appropriate treatment. Ultimate recovery in cases of this kind depends largely on the prompt recognition of symptoms and early application of remedial measures. Continued studies of this character among school children are demanded to show the necessity of this form of health supervision for the protection of the mental health of communities.

An appreciable number of epileptic children have been observed in the course of these surveys of rural schools. The epileptic school child requires careful supervision because of the not infrequent occurrence of temporary mental disturbances in close association with an attack, during which serious bodily injury may be done to other children. Here, again, rural districts are sadly handicapped by the absence of medical school inspections and facilities for the care of epileptic children.

Our investigations have demonstrated the value of the school as an instrument to promote the mental health of rural communities and have indicated a number of ways in which it may be utilized for this purpose. Of these may be mentioned measures intended (1) to determine the prevalence of mental deficiency, (2) to promote rural sanitation, (3) to train the individual child in the formation of correct habits.

(1) Our experience has shown that it is necessary to confront the average rural community with a specific problem before the cooperation of the whole community can be obtained in the application of measures intended to meet a particular situation. It is of prime importance, therefore, to determine the number of mental defectives in a given community. Because of the close association between the home and the school, a mental examination of school children is the most practical means by which the prevalence of mental deficiency may be determined.

It is very desirable in this connection, however, to adopt uniform methods of procedure. For example, the considerable variation in the percentage of feeble-mindedness in the general population, as given by different observers, is too great to be accounted for by differences in local influences. These variations are due, in large part, to (a) the absence of a definite recognized feeble-minded "complex" and (b) the need of practical uniform tests of certain mental functions.

The proper classifications of persons who are patently feeble-minded is not difficult. It is a far different proposition in border-line cases, however, to say just when retardation ceases and feeble-mindedness begins. There is need for far greater diagnostic precision in these cases than obtains under present conditions to bring about uniform results. As it is, the classification of a number of border-line cases depends largely on the personal equation and experience of individual observers.

Furthermore, our investigations have shown the desirability of employing psychologists having biological training to conduct examinations of this character. In studies of mental deficiency a distinction must be made between acquired mental defects and those that are transmissible. For example, children who become defectives through traumatism, severe organic lesions, and more or less prolonged action of certain infections and improper dietaries are not defective in the true meaning of the term.

(2) Not only does the continued presence of endemic diseases entail great economic losses to communities where they prevail by reducing the physical efficiency of a great part of the population, but they are also accompanied by a smaller

reduction in mental efficiency. These harmful influences continue to exist because of the general lack of information so common in rural communities concerning their cause and prevention. In a number of instances it is a difficult matter to secure the cooperation of the adult population, which is set and fixed in its habits, in measures intended to improve the community health. Health supervision of school children not only gives valuable information concerning the prevalence of these conditions. but it also exercises an educational effect on the rising generation, through whom the sanitary redemption of these communities is largely to be brought about.

The control of hookworm disease is a matter of personal hygiene and community sanitation. The school is an effective agent for the demonstration of measures for its control, and in addition offers exceptional facilities for the early detection of hookworm sufferers and their prompt cure, both of which are necessary to prevent permanent mental impairment.

Mention has been made of the effect of poor nutrition on mental development in connection with pellagra. The ill effects of faulty feeding in infancy and early childhood on the physical and mental health are well recognized. It was not discovered until recently, however, that food value means much more than its estimation in terms of calories. It is now known that a diet sufficient to supply the demand of normal metabolism must contain a due proportion of what are called "vitamines."

Vitamines occur in very small amounts and in varying proportions in different foodstuffs, a fact which must be taken into consideration in arranging a dietary for the cure and prevention of nutritional disorders. The mental hygienist is deeply interested in the school, therefore, as a factor in the prevention of these disorders through the teaching of food preparation and food values and the extension of this knowledge to the home.

(3) It has been asserted that a large percentage of school children are predisposed to mental "complexes" usually found associated with what are now considered functional disorders of the mind. Incorrect habits of thought and feeling in the child. unless corrected, are possible causes of the failure of the child later in life properly to adjust himself to his environment. We have observed in rural communities children who present one or more of the symptoms usually enumerated as

forming a mental "complex" in such numbers that grave doubts are raised as to the correctness of this form of posteriori reasoning. Certainly there is need of something other than indefinite statements regarding the relation between personality and psychosis. The most practical plan for supplying this want, I believe, is the study of personality in developing school children, somewhat after the manner outlined by Hoch. Data so collected and filed for future reference will be of the greatest value in the correlation of certain mental traits and sychoses appearing later in life.

Studies of this character also serve to draw attention to the milder forms of abnormality which, when neglected, crystallize into faulty habits productive of grave consequences to the mental health.

To be effective the teaching of correct "habit formation" should begin in the home at an age earlier than that represented by the school period. Unfortunately, this is not of general application in most rural districts, where the tendency to the formation of incorrect habits is largely due to the comparative isolation of families and the lack of contact with the broadening influences of the outside world. The school, therefore, stands in a very definite relation to such communities in supplying the training for the prevention of faulty habits which so materially reduce individual efficiency.

SPORADIC MENINGITIS IN CHILDREN*

BY PHELPS G. HURFORD, M.D.
St. Louis

Much has been written about the diagnosis and treatment of meningitis. Latterly the treatment has been pretty much confined to the use of the specific serum in the cases due to the meningococcus, the others having been shown to be practically uninfluenced by treatment; and the points in diagnosis have concerned themselves mostly with the indications for lumbar puncture, that being the actual means of diagnosis.

This paper has been prepared principally because of the large proportion of cases I have seen in which the children have come to my notice without the meningitis having been

*Read at the Fifty-Ninth Annual Meeting of the Missouri State Medical Association, Excelsior Springs, May 8-10, 1916.—Missouri State Med. Jour.

suspected, or in which lumbar puncture had not been done, even though the condition was perhaps suspected.

Cases of sporadic meningitis, that is, meningitis occurring in scattered localities, one at a time, here and there, without any sort or degree of an epidemic, seem for some reason difficult to recognize. And yet there are few conditions in which the diagnosis is easier or more certainly made if one happens to think of it.

And the diagnosis is of great importance, in the acute meningococcus cases, because of the necessity of early treatment; in the tuberculous and other cases, because of the advantage of giving the proper prognosis. In the tuberculous form, which is by far the most frequent, early diagnosis is often exceedingly difficult unless one thinks to do a lumbar puncture; as I said before, the various symptoms are of value only as an indication for this procedure.

During the last five years I have kept records of every case of sporadic meningitis in which the organism was definitely determined. Most of the cases were observed at the St. Louis Childrens' Hospital and the City Isolation Hospital. When this paper was first written it included forty-seven cases, of which thirty-five were properly sporadic, and twelve occurred during what might be considered a moderate epidemic. Since that time ten additional cases have been seen, in each of which the organism was found, making forty-five cases that can be properly considered as sporadic.

Of these twenty-five were due to the tubercle bacillus, ten to the meningococcus, four to the streptococcus, three pneuococcus, two staphylococcus, and one to the influenza bacillus.

The age incidence varies considerably from that of other series of cases. The cases of purulent meningitis occurred in children under two years of age in all but six instances, 70 per cent; and the tuberculous cases in children under 2 years in only eleven instances, 25 per cent.

One case due to the staphylococcus was an infant 12 days old. The only symptoms were frequent convulsions, irregular low fever, and a very misleading diarrhea. Between convulsions there was no neck rigidity, no Kernig, no Brudzinski, and no constancy about any of the reflexes. The baby developed a rapidly progressing hydrocephalus and died in about two weeks. No focus of infection could be demonstrated. Lumbar puncture done on the second day of observation showed a purulent fluid with pure staphylococcus culture. This case was seen with Dr. Herman A. Hanser. It evidently had very little resistance to the staphylococcus infection for it developed an impetigo that spread like wildfire and could not be in the least controlled.

Two of the streptococcus cases followed fracture of the base of the skull. The other two chronic otitis media.

Two cases of pneumococcus infection developed in the course of pneumonia. The other was presumed to have had pneumonia from the history but none could be demonstrated.

Of the fourteen infants out of the twenty cases of purulent meningitis seven showed definite hydrocephalus, two of them after the acute symptoms had subsided. This is to be feared always in infants. All but two of the infants died. One that recovered had a severe opthalmia with tremendous swelling and marked purulent secretion. This was pronounced by the oculist to be a meningococcus infection, though at the infection hospital we had been unable to determine the organism. Sight was destroyed in the eye. Four of the older children recovered perfectly. None of the distressing sequelae occurred.

There were three cases of chronic posterior basal meningitis, in two of which the meningococcus was found; in the other the cause could not be determined, and it is not included in the series.

The most disconcerting point in the observation of these cases is the difficulty in recognizing meningitis in young infants. The tuberculous form it particularly hard to recognize when it develops rather suddenly and the paralytic stage rapidly ensues. I have seen four cases in the paralytic stage in which no history pointing to meningitis could be obtained, and the diagnosis of meningitis had not been made until the child entered the hospital. During this stage the diagnosis can be made almost at a glance by one familiar with the disease. The recognition of the purulent forms is much easier, but other conditions often simulate it very closely. Chief among these is intoxication, next pneumonia, and next poliomyelitis. Cerebrospinal lues is usually differentiated readily by the history and a few days' observation. Cases of intoxication can present an absolutely typical picture of meningitis, as can other conditions less frequently.

This condition of meningismus, or meningism, is a very remarkable one. It may be seen in almost any acute febrile condition or occur without known cause. One case in particular illustrates this very well. A rather neurotic boy of 10 years was brought to the clinic having been taken suddenly with a severe headache the day before. He had been frequently seen in the clinic for various illnesses. I showed him to the students and a couple of post-graduates as a typical early meningitis: it was so typical that I sent him into the hospital to be demonstrated by Dr. Tuttle, who was quite as impressed as I was. He had the severe headache, sharp reflexes, hyperesthesia, photophobia, sluggish pupils, neck tenderness and rigidity, Kernig and Brudzinski. I know better now, but I was willing then to pronounce that a case of true meningitis. Lumbar puncture showed a decidedly increased fluid, but perfectly normal. The headache subsided rapidly after the puncture, all other symptoms more slowly, and the child was perfectly well next day and remained so.

Spinal puncture is the only definite means of diagnosis. It is best done at once in every case with meningeal symptoms. If a turbid fluid is withdrawn the diagnosis is made. It is easily performed and is quite harmless if done in a cleanly manner. Partial anesthesia is advisable when the rigidity and hyperesthesia are marked, chloroform or ether being used as indicated. Local anesthesia is of slight value, as the periosteum cannot well be anesthetized. Great pain is caused by scratching the periosteum in groping for the opening into the canal. The best way to enter the canal is in the mid-line, just below the spine that is nearest the level of the iliac crests; entrance is safe anywhere below the body of the third lumbar vertebra. It is usually well to grasp the needle about 1½ inches from the point, so as to measure the depth of penetration; the canal is entered at a depth of from 1 to 1½ inches, according to the age and size of the child. If the fluid does not flow when the canal is entered the child may be raised to a sitting posture, but should not be left so after the flow has started. Dry taps usually mean faulty technic, but may be due to a clot of blood, a clot of fibrin, or to the point being pressed against the anterior wall of the canal. True dry taps do occasionally occur, due no doubt to decreased secretion of the spinal fluid or very scanty exudation. Obtaining true dry taps on two successive days is exceedingly rare and should be regarded with suspicion.

The most valuable lesson learned from these cases is the advisability of giving Flexner's serum in every case as soon as a purulent fluid is obtained. Valuable time is lost looking for the organism. The serum does no harm in any of the purulent cases, and the earlier it is used in the meningococcus form the better And it seems inconsiderate, to say the least, to subject the child to a second puncture for the administration of the serum when the needle has already been in place ready for the injection. If, later, some other organism is found to be the case, the serum is, of course, discontinued.

The serum should be given as long as the acute symptoms continue, every twelve hours in severe cases—every twenty-four in milder ones. When headache, fever, restlessness, etc., have subsided the neck rigidity can be disregarded; it may continue for several weeks.

The most valuable points in the probable diagnosis of purulent meningitis are the sudden headache with fever, the hyperesthesia, neck or other rigidity, eye symptoms, irregular pulse and breathing; and the signs of McEwen (after some practice), Brudzinski, and Koenig. The last is quite often present in cases that are not meningitis, and often absent in true meningitis. In infants rigidity of the neck muscles often can only be demonstrated by having it lie on one side and note the reaction. This sign, with bulging fontanelle and eye symptoms are particularly important in infancy. Rigidity by manipulation is very hard to interpret. A very valuable point of differentiation is the refusal of the child to turn the head when attracted by something at one side.

In tuberculous cases the most important points are irritability combined with periods of drowsiness increasing from day to day; hyperesthesia, vomiting and constipation; headache is very common in children over two years; nearly always also careful examination will reveal some irregularity of pulse and respiration, sluggish, contracted pupils, and some tenderness and rigidity of the neck. Other signs due to muscular rigidity are very unreliable. The slowly deepening drowsiness, with irregular pupils and irregular pulse and breathing, are extremely characteristic of tuberculous meningitis. Often there is a history of tuberculosis, or evidences of it elsewhere in the body.

Spinal puncture seems to be considered by a great many physicians as largely a hospital measure. With ordinary care it can be done perfectly well at home and the care is only that which must also be observed in a hospital. There are certain advantages in the materials being at hand with which to properly examine the fluid, but sufficient information is obtained at once from the fluid itself to make intelligent action quite possible.

A clear fluid, under increased pressure, may be obtained in meningism from any cause in cerebrospinal lues, poliomyelitis or intracranial abscess. I have seen a case of typhoid fever in which the tentative diagnosis of meningitis was made, lumbar puncture performed, 40 c.c. of a clear fluid withdrawn, with the marked subsidence of the delirium, restlessness and the general rigidity. Any inflammatory condition with a clear fluid, as tuberculosis, lues, and poliomyelitis, is absolutely differentiated from the non-inflammatory conditions by one or two very simple tests. Noguchi's test of heating with 10 per cent butyric acid in NaCl, and adding normal NaOH, will show an increase of globulin in all inflammatory cases; Nonne's test with saturated (NH40)2S04, is perhaps of less value, but is quite as definite in practical hands. The cell count, gold chlorid and other finer tests, are of no special value in differentiating meningitis, though the gold test is said to show a typical tuberculosis curve. I believe that, with the proper care and patience, the tubercle bacillus can be found in the spinal fluid in nearly every case with the first fluid obtained. It is best to take the last fluid which flows out. The centrifugation is facilitated by allowing a drop of blood (from one's own finger) to mix in the top of the fluid. Rapid revolution for several hours is necessary. Then the fluid is drawn off, all but a few drops at the bottom. This is shaken, and the bottom of the tube scraped well with a sharp instrument.

A drop is allowed to fall on a slide and is dried as it lies without disturbing; another drop is superimposed and dried the same way; every drop is so dried in the same spot, perhaps eight or ten. Staining is done as usual, but decolorization is usually perfect in twenty seconds. By this means I find the organism in practically every case at the first trial.

The turbid fluids need little examination, except for the germ causing the inflammation. Generally the turbidity is so marked that the purulent nature is apparent. If not, the preponderance of pus cells absolutely differentiates the condition from anything else. The meningococcus is readily differentiated from any other organism causing meningitis by the fact that it is a Gram-negative coccus. The Claudius modification (1 min. gentian violet, ½ min, picric acid, decolorize with chloroform), is simple, time-saving, and accurate. Examination for the organism, or smears on culture, should be made as soon as possible, as the organisms seem to be readily destroyed by standing in the fluid. Immediate culture on suitable media is advisable in every case, as exact knowledge of the organism will, of course, have a definite value in deciding for or against continuing the serum.

Ventricular puncture is indicated when only a small amount of fluid is obtained (a few drops) and the symptoms are severe. It should not be resorted to unless the same conditions are shown on two or three successive days. There seems to be some value in having the child lie on alternate sides on successive days to allow ventricular drainage. If the ventricles evidently do not empty themselves, and the purulent fluid is probably accumulating, ventricular puncture should be attempted by some one thoroughly familiar with it. Serum should be injected only if several cubic centimeters of fluid is obtained, and then with great caution.

In regard to the remarkable lack of contagiousness of the sporadic form of diplococcus meningitis, no explanation seems to be available. In this series there was only one family in which more than one case occurred, and in no other case was there any other case in the neighborhood, and no explanation of how the infection occurred.

Wall Building.

ECZEMA IN INFANTS AND YOUNG CHILDREN*

BY CHARLES GILMORE KERLEY, M.D.
New York City

Among the disorders of infants and young children that stand apart from those of a serious nature there is none that is of as much annoyance to the patient and the patient's family as eczema. Not only is it unsightly, but as a consequence of the discomfort to the patient, nutrition and growth may be seriously interfered with in severe cases.

*Read at the Annual Meeting of the Medical Society of the State of New York at Saratoga Springs, May 17, 1916.—New York State Journal of Medicine.

Eczema in the young may be due to widely different causes. It may be the expression of faulty processes relating to food utilization or the evidence of an immediate reaction against specific food substances.

On the other hand, it may be due to conditions entirely external. The skin of many infants and children is very sensitive. External irritations may cause very active reactions. The application of strong soap, liniments or mustard may cause eczema. Woolen garments, exposure of the moist skin to cold air, excessive perspiration, parasitic skin diseases, discharges from the navel, ears or nose, all may supply sufficient irritation to cause an eczematous reaction on the parts exposed.

Eczema involving the buttocks, groin, genitals and inner surfaces of the thighs in which there is the red, raw and sometimes bleeding surfaces, may be looked upon as a skin trauma, the outcome of direct irritation of the urine and bowel discharges. Heavy napkins and the stork diaper contribute not a little in the etiology.

Eczema from Internal Sources.—This type of eczema represents a skin reaction to a toxemia, a result of specific food intolerance, and this skin response may be the only expression of the toxemia. Eczema from immediate intestinal sources, so-called intestinal indigestion, is according to my observation a very unusual factor in producing the disease. There is a wide variety of foods that may produce eczema. A child may react to the smallest quantity of a given food or it may possess a tolerance for a food up to a certain amount, exceed this amount, and the skin reaction, redness, inflammation and itching result. An infant may take without inconvenience one-half ounce of milk sugar in his food. Give him one ounce and a skin reaction results. An infant may tolerate a milk mixture containing one per cent of butter fat. Give him two per cent and he reacts. The same may be said of whole milk. I have repeatedly known children to tolerate eight, ten or twelve ounces of milk daily, but when a larger amount was given eczema resulted. In these cases under a very gradual increase in the amount a tolerance is established. Whole milk in a sufficient daily amount for nutrition will eventually be taken without inconvenience.

A most interesting infant gave a marked constitutional reaction to two drams of cow's milk when two days old. There was prostration, high temperature (106½ degrees) and collapse. This infant, at the third month, could take two drams of cow's milk at one feeding. When four drams were used he broke out at once in an extensive erythema. The eye-lids swelled, a coryza developed and the child presented the appearance of the catarrhal stage of measles. Strange to say, this child failed to show a local reaction to cow's milk. At the present time this child, aged six months, has a capacity of 9 oz. daily of cow's milk.

I attempted to feed a newly born babe on cow's milk. An extensive eczema developed which I could not control. The skin cleared at once when a wet nurse was supplied. After a few weeks the wet-nurse, who had not taken cow's milk because it did not agree with her, was urged to dring one pint daily. The infant immediately developed an eczema of the case which cleared when the milk was stopped by the wet-nurse. Three attempts were made for my own observation with a like result. The nurse could not take anything containing milk, such as milk pudding, without an eczema appearing in the child. The eczema could be made to appear and disappear with the use of and the withdrawal of cow's milk from the dietary of the wet-nurse.

Orange juice will cause reaction in the form of red scaly patches about the mouth, the erythema of the cheeks and other portions of the body. Some infants possess no tolerance whatever for orange juice. Others will take a small amount without inconvenience. If an ounce is given the erythema appears. Beef juice will often act in a like manner. I have patients under my care who cannot take a particle of cane sugar but who show no inconvenience in the use of honey or maple syrup.

Butter fat, milk and cane sugar, eggs and orange juice have been proved through processes of elimination to be the most frequent dietetic causes of eczema in observations covering a large number of cases. Cow's milk protein is rarely a cause of eczema and if it is cooked it is still less often a factor.

The scratch skin test for proteins has been of very little value in determining protein capacity in infants, for the reason that there are infants who do not respond to the scratch skin test and yet possess a limited tolerance for the protein in question. It was interesting to observe that among fifty-four eczema cases tested by the scratch skin test, therty-one responded to white of egg; among eighteen eczema cases tested by scratch skin test eight responded to cow's milk protein; among six eczema cases tested by scratch skin test none responded to oat protein; among two eczema cases tested by scratch skin test one responded to barley protein.

When a sensitized patient is given protein internally, to which the skin reacted, symptoms such as vomiting, erythema, urticaria, coryza and collapse may be expected.

Other than eczema we have asthma and uricaria as not infrequent results of protein incapacity.

Mixed Cases.—Many of the cases of eczema due primarily to internal agencies become infected through scratching or exposure to bacteria in the air or clothing, and skin lesions result as described in the text-books.

Management of Eczema.—Cases due entirely to external agencies of an irritant nature are readily relieved by removing the source of the trouble and the application of protective dressings soothing or stimulating in character. The most difficult of relief is the eczema intertrigo in infants. In these the child is easily taught to evacuate the bowels night and morning. Over the genitals a large bunch of absorbent cotton is placed to catch the urine, and citrate of potash, about twenty grains daily, given internally. As a protective dressing ungt. aqua rosæ to which white wax is added in the proportion of 10 per cent is used. One thing is to be remembered, the involved areas must be protected absolutely from scratching and other irritation.

Cases in which the food factor is prominent will not be permanently relieved by local measures. I see many cases that have been wrapped in ointments and bathed in lotions resulting only in temporary relief of the disease. Cases of this kind will only be treated successfully by adjusting the diet to the child's capacity.

The Breast-fed.—The question at once arises: "What are we to do in the eczema of the breast-fed?" My first step is to examine the milk of the mother, and if a high fat content is found an attempt is made to reduce it through dieting processes in the mother or in the reduction of the intake in the use of a cereal water, one to three ounces before each nursing, with the result usually not very satisfactory. The child may be improved but rarely cured. Will the baby be cured through weaning? Almost always with suitable bottle feeding. Is it advisable to wean a thriving baby because of eczema? Practically never The treatment in nursing babies is accordingly not very satisfactory to patient, mother or doctor. Through the use of the mask and soothing applications comparative comfort may be supplied, and with this all must be satisfied.

The Bottle-fed.—In the bottle-fed the management promises a great deal more and the method I have followed with best results has been in the use of plain skimmed milk or evaporated skimmed milk, cooked with a starch, preferably rice or wheat. All infants digest starch readily and this, with the 4 per cent of sugar in the milk, supplies the carbohydrate vitally necessary because of the withdrawal of the fat. A high protein and a high starch food is given, often with the addition of olive oil to raise the calorie content. As early as the seventh month stewed carrots, squash and mashed potato are added to the diet The salt of fresh vegetables possesses an undoubted therapeutic value.

In undertaking a case of several months' standing I always advise the parents that the child may lose in weight the first few weeks

In older children, past the bottle age, the management is along similar lines. Skimmed milk, puddings made from skimmed milk, all the bread stuffs, all cereals but oatmeal, all vegetables, usually twice a day, chicken and butcher meat rarely Everything given is largely sugar free. If there is constipation a daily evacuation of the bowels is produced by magnesia or cascara. By the above means I have permanently relieved a great many cases of chronic eczema always with the aid of local measures such as salicylic acid and tar, to prevent itching, and mechanical measures to prevent scratching. Among the drugs for internal administration, citrate of potash sufficient to neutralize the urine is the most valuable.

Not all cases of eczema admit of cure, and yet I believe that all cases may be cured if we dare to draw our dietetic lines sufficiently rigid. This might mean a clear skin, but it would also mean faulty growth and some degree of malnutrition. I have cases that I do not dare to cure completely. I have now and then a case that I have entirely cured but do not dare to keep him eczema free because of loss in weight. I believe that proper growth and right development are far more important than personal appearance. The successful management of eczema of internal sources depends upon our ability to discover the disturbing factor to eliminate it or immunize the patient to it.

I am not in accord with any theory relating to a special constitutional state such as the exudative diathesis as necessary for eczema, for the following reasons: That a combination of high butter fat, high sugar of the arts, orange juice and beef juice will produce an eczema in many children who never show the condition when normally fed. Further, eczema may be produced by many foods of widely varying types. How dissimilar are orange juice, cow's milk fat and beef juice and sugar? Not every child, however, will react to all of these foods. The one may respond to beef juice but will tolerate milk. Another will react to cane sugar but show no response to orange juice. The so-called exudate diathesis or exudative condition with exudative symptoms may be produced at will by the administration of certain food substances in a great majority of children.

One reason for the frequency of eczema in children is because the child is unable to adjust itself to the many varieties of food and food elements which are given him, whether natural or artificial.

SOCIETY TRANSACTIONS

PROCEEDINGS OF THE SOCIETY OF PHYSICIANS AND SURGEONS

Louisville, Ky.

RABIES—Paper by A. L. Parsons*

Dr. V. E. Simpson: I have never seen a case of rabies in the human being, nor have I seen an animal during an unquestioned attack of the disease. I am quite well aware that there are some good men in the medical profession today who seriously question the existence of rabies. In my own mind, that such a disease exists, there is no doubt. That it is a strange one in its manifestations and irregular outcroppings, and that we do not see the disease oftener than we do, with the possibilities that exist in the canine family and the opportunities for transmission of the disease from one animal to another and from animals to human beings, is likewise inexplicable.

Laboratory studies with reference to rabies are possibly questionable to a degree. We have found the Negri bodies in our laboratory and with most observers who have found them, do not question that they are pathognomonic of this disease, inasmuch as abundant opportunity has been had to observe the brain and spinal cord of animals and persons who have died of other pathology where these bodies have not been noted. It is true they are difficult to find, it is also true that the stage at which the animal is killed determines the readiness with which these organisms are found, for they increase in ratio with the age and severity of the disease.

A serious mistake is usually made by the public, and particularly by the police force, in that they seem imbued with the idea that they should give an exhibition of their marksmanship so soon as a dog inflicts a wound of this kind, instead of following the common sense plan of isolating the animal and keeping it confined under normal conditions so far as concerns food, water, etc., with freedom from annoyance, and allow the disease, if present, to develop, and, if not, to demonstrate by its continued absence that there is no danger from the bite of this particular animal, other than that which might come from the common pus-producing organisms. If this rule could be followed, and it seems to me the medical profession should insist upon it and help to educate the public to this idea, many of these unfortunate individuals and their families would thus be permitted to avoid the annoyance, the anxiety and solicitude concerning the outcome of a dog bite which has been inflicted within the last few days or weeks. If the animal does not develop symptoms of the disease, there is no necessity, of course, for the individual having any further anxiety.

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The common idea which has obtained among quite a per cent of the laity, that if a child is bitten by a dog and that dog should subsequently develop rabies, even a year or two later, that this child will then have rabies, is absolutely untenable. Another superstition which has been handed down to us, is the belief in what is commonly known as a "mad-stone," and whether or not this stone adheres to the wound inflicted by the dog—if it adheres it is a case of rabies, otherwise it is not. I do not know how many of you have seen mad-stones; I have seen them, but have never seen a mad dog. There is nothing in the mad-stone, either as a therapeutic or diagnostic aid.

I do not doubt that rabies exists as a disease. I think perhaps the strongest, the most scientific and conclusive proofs of the existence of the disease, have been furnished by the Medical Department of the U. S. Army in the Philippine Islands since American occupancy. The work which has been done by Frazier and others in connection with rabies in the Philippines has put the disease on a fairly scientific basis so far as its actual existence is concerned.

Some of the laboratory men urge the caution with reference to the examination of sections, that sometimes the toxic influence of the poison of the disease may produce changes in the cellular structure with crowding of the white blood cells, particularly in the pineal gland, which not infrequently may resemble closely the Negri bodies under the microscope.

Dr. A M. Barnett: I recall having seen, about nine years ago, two people who were bitten by a dog with rabies. That dog was kept until he died, and we had Dr. Vernon Robins examine it and he said it had rabies. About ten days after being bitten the man and his wife underwent a course of treatment in Chicago. I think the police stations ought to be supplied with nets so they could catch these dogs instead of shooting them promiscuously.

Dr. Leo Bloch: I have seen several children who had been bitten by dogs. I remember two cases in particular where one child submitted to treatment and did not develop rabies, the other one was not treated and developed the disease on the twenty-first day and died.

The situation in Louisville appears to be peculiar. For instance a patient of mine telephoned me that her baby had been bitten by a strange dog. I reported the occurrence to the Health Department, and they sent to the house to get the dog, but it had then been taken away. The next move I had to make was to visit police headquarters and "swear out a warrant for possession of the dog." The matter was held in police court for three weeks, and they then issued an order to produce the dog. I told them at the time that the dog had bitten a child and as there was danger of rabies the dog ought to be under observation. When the case was finally called they fined the family $1.00 and costs for harboring a vicious dog, and that was the end of it. When you want to do anything about a dog that has bitten anybody in Louisville, it is useless to appeal to the police department as they do not seem to realize the importance of such matters.

Dr. J. R. Peabody: You will doubtless remember the pet monkey which was kept at the Waverly Hills Tuberculosis Sanitarium. About a month ago this monkey was bitten by a dog during an epidemic of rabies. They kept the monkey confined. and he soon developed symptoms of rabies, which were absolutely pathognomonic. They did not wait for the monkey to die, but killed him and the brain and spinal cord will be submitted to microscopic examination.

We often hear sensible medical men take the stand that there is no such thing as "hydrophobia." I do not know how the members of this society feel about it, but let anyone who believes there is no such disease take the trouble to read the literature and he will surely be convinced to the contrary. The best book I have ever read on the subject is "The Life of Pasteur," written in a very interesting way by a Frenchman. This book has been translated by an American woman and is published by Doubleday, Page & Company, of New York. It shows how Pasteur experimented with animals, and it was a long time before he could be persuaded to try his method of treatment upon a human being. The results of his experiments on animals were absolutely as clear and as undoubted as his discovery of the germ of rabies. The first human being upon whom his remedy was tried was a child whose face was so badly mutilated by a dog that the mother begged Pasteur to give the child chloroform and thus destroy it, as it was so disfigured; but he finally decided that here was a good opportunity to try his method of treatment, and the result was successful. The dog which had bitten this child had an undoubted case of rabies. Even after the child recovered, it was terribly disfigured; but it did not develop rabies. After treating a second case successfully, he published his results, and his treatment was thereafter extensively used throughout France and England.

If there are any doctors present who do not believe there is such a disease as rabies, they should investigate the literature, and especially the work of Pasteur.

Dr A. L. Parsons: There are a few other points which may be interesting. One is that only fourteen to sixteen per cent of persons bitten by mad dogs develop rabies. Simply because you are bitten by a mad dog does not necessarily mean that you will develop rabies.

Another popular idea is that hydrophobia is most prevalent during the hot weather. There was at one time an epidemic of canine rabies in Greenland when the temperature was 25 degrees below zero. There have always been a great many cases of rabies in Russia, which is a very cold country.

While in the case reported anti-rabic serum was obtained promptly the doctors who saw the case with me persuaded me as well as the family that it would be useless to administer the serum after the disease had advanced to the last stages. A point mentioned by Dr. MacCormack was well taken, that it would simply be a "black eye" for the serum treatment, which should be administered immediately after infliction of the injury. There is one case on record at Bowling Green where a child was brought there and the serum administered ten days after being bitten, but one week after the treatment was started the child developed rabies. The treatment consists of twenty-one consecutive doses of serum, and they had only given seven when the child developed rabies and died.

The treatment after the disease has developed consists of the administration of morphine, chloral, bromides, etc., to induce quietude. Before the disease has developed the treatment is simple, viz., twenty-one consecutive doses of the serum, about 2 c.c. each, which is injected hypodermically.

In the case reported the father, mother and an aunt had been badly scratched or bitten by the child, and all three received the serum injections for twenty-one days. In addition the abrasions were painted with iodine at once. I find in the literature that formaldehyde and nitric acid have been used for similar purposes. This child was constantly frothing at the mouth, which led me to believe possibly the father and mother might develop rabies without prophylactic treatment.

Dr V. E. Simpson: I would like to emphasize one or two points in connection with the prophylactic treatment of rabies. With reference to the state board of health: we have in Kentucky a state board of health which has conducted a very vigorous exploiting campaign in regard to rabies and hookworm disease. The state laboratory is perfectly competent to make the diagnosis of hook worm disease, but with reference to rabies the laboratory is absolutely helpless. Just why they refer to it as a Pasteur Institute is beyond my power of comprehension.

If a dog bites a patient of yours, you are instructed to have the dog's spinal cord and brain carefully preserved and forwarded for examination to the Government Laboratory at Washington or to some other laboratory; as soon as the diagnosis is made they telegraph instructing that the patient be sent at once to Bowling Green for treatment. In either event the serum is not prepared at Bowling Green, nor is the diagnosis made there. I fail to see just what good such a laboratory is in reference to this disease, excepting that it serves as a medium for advertising.

There is not a doctor in the State of Kentucky who cannot give a prophylactic course of treatment against rabies as thoroughly as the state laboratory director can give it; there is not a doctor in the State of Kentucky, who is within access of the U. S. mails or direct delivery by train, but can secure the serum from any manufacturing biological house just as readily as the state laboratory can, and I think it is high time that the medical profession of the state should look after these cases and ignore the state laboratory so far as rabies is concerned.

BOOK REVIEWS

The Practitioner's Visiting List for 1917. Four Styles: weekly, monthly, perpetual, sixty-patient. Pocket size, substantially bound in leather with flap, pocket, etc.; $1.25, net. Lea & Febiger, Publishers, Philadelphia and New York.

The text portion of The Practitioner's Visiting List for 1917 contains, among other things, valuable information, a scheme of dentition; tables of weights and measures and comparative scales; instructions for examining the urine; diagnostic table of eruptive fevers; incompatibles, poisons and antidotes; directions for effecting artificial respiration; extensive table of doses; an alphabetical table of diseases and their remedies, and directions for ligation of arteries. The record portion contains ruled blanks of various kinds, adapted for noting all details of practice and professional business.

It affords a simple and complete system for keeping the records of daily practice. In addition to the ruled pages for daily calls and their notes, general memoranda, addresses, cash account, etc., it contains specially arranged spaces for data desired for permanent record such as births, deaths, etc. The value of such records is best appreciated by the physician who has been suddenly confronted by the necessity of producing such data after the lapse of years and in the absence of an orderly system for their preservation.

It is issued in four styles to meet the requirements of every practitioner: "Weekly," dated for 30 patients; "Monthly," undated, for 120 patients per month; "Perpetual," undated, for 30 patients weekly per year, and "60 Patients," undated, for 60 patients weekly per year.

Genito-Urinary Diseases and Syphilis, by Edgar G. Ballenger, M.D., Adjunct Clinical Professor of Genito-Urinary Diseases, Atlanta Medical College; Editor Journal Record of Medicine; Urologist to Wesley Memorial Hospital; Genito-Urinary Surgeon to Davis-Fisher Sanitorium; Urologist to Hospital for Nervous Diseases, Etc., Atlanta, Ga. Including the Wassermann Reaction. Assisted by Omar F. Elder, M.D., and J. Edgar Paullin, M.D. Third edition. 558 pages with 115 illustrations. Price $5.00 net. Atlanta, Ga., E. W. Allen & Co. 1915.

The reviewer is impressed with the absence of unnecessary physiological and anatomical descriptions of the genito-urinary organs with which every general practitioner is familiar, or if not, he has at hand text books to which he can refer, therefore the author delves direct into his subjects. His first chapter discusses the subject of acute gonorrhoea, and this section alone is worth the price of the volume. The author's method of aborting incipient gonorrhoea by sealing argyrol in the anterior urethra is one of the few sane, safe and sensible abortive procedures.

A clear and succinct description is given of the Wasserman and leutin tests. This last revision embodies all the latest advances in the diagnosis and treatment of the more commonly seen diseased conditions of the urogenital organs, while some of the rarer maladies are given but brief mention. This deficiency has been more than made up by the emphasis on gonorrhoea and syphilis. The treatment of the latter, is given in a special chapter, describing the culture of the spirochaeta pallida; inoculation of animals and the use of Ehrlich's salvarsan and neosalvarsan, etc. Ballenger very satisfactorily describes all the details of the treatment, and includes all the latest teaching in the treatment of syphilis, which now stands next to tuberculosis in its importance as a disease of civilization. It is evident that the authors have been carefully studying the recent literature of their subjects. It is very practical and contains much useful information and many valuable suggestions, and we very heartily commend it to student or practitioner as a dependable guide and safe adviser.

Bacteriology, General, Pathological and Intestinal.—By Arthur I. Kendall, B.S., Ph.D., Dr. P.H., Professor of Bacteriology in the Northwestern University Medical School, Chicago, Ill. Octavo, 651 pages, with 98 engravings and 9 colored plates. Cloth, $4.50, net. Lea & Febiger, Publishers, Philadelphia and New York, 1916.

This work covers fully the advances of bacteriology along the lines of morphology, staining and diagnosis, and the preparation and use of cultural media. It gives attention, moreover, to the problems of immunology as related to the chemistry of bacterial activity, which subject is presented in concrete and concise form, indicating the relation of the chemistry of bacterial activity to the biology of the bacteria.

The relation of the chemistry of bacterial nutrition to the study of intestinal bacteriology in health and disease is clearly set forth in the author's chapter on intestinal bacteria. Throughout the work, emphasis is laid on what the bacteria do rather than on what they are, since interest naturally is centered in the host rather than in the parasite.

Historical notes stimulate interest in the study, and aid in the comprehension of the subject by showing the steps in the development of modern Bacteriology. The author's emphasis on the applications of Bacteriology in Etiology and Preventive Medicine is a point of value. The sections dealing with the physiological functions of bacteria are most enlightening, and the latest knowledge of complement fixation, hemolysis and the reactions of immunity is adequately presented.

Some of the more general aspects of the relation of the chemistry of bacterial nutrition to the study of intestinal bacteriology in health and disease are briefly, but clearly, set forth in the chapter relating to intestinal bacteria. The section dealing with the bacteriology of milk, and milk in its relation to the public health, are of momentous importance to the physician who would keep abreast with the latest teachings on this subject, which reached a high degree of precision through the aid of bacteriological diagnosis, now an important branch of medical science.

Concise statement, clear expression and the elimination of theoretical considerations in favor of essentials are characteristics of this work, and its usefulness will impress itself more and more on the practitioner or student as he avails himself of its guidance. Every step in every process is made clear. The details of laboratory equipment, the minutiae of laboratory technic, and the use and value of apparatus receive careful attention. This work is a thoroughly scientific and completely modern presentation of the proven and useful in its field.

Dr. Kendall is to be congratulated upon the clear, concise style in which he presents bacteriological, immunological and biochemical methods in the study of disease and diagnosis. One cannot examine this work carefully without being impressed with the author's vast and comprehensive grasp of the subject upon which he writes so learnedly and entertainingly. The book is printed on good paper, with a handsome buckram binding. The illustrations are all good and have been selected with great care, adding much to the elucidation of the text. This book should be in the hands of every practitioner of general medicine.

A Practical Medical Dictionary of Words Used in Medicine with Their Derivation and Pronounciation, Including Dental, Veterinary, Chemical, Botanical, Electrical, Life Insurance and Other Special Terms; Anatomicis, Tables of the Titles in General Use, and Those Sanctioned by the Sasle Anatoma Convention; Pharmaceutical Preparations, Official in the United States and British Pharmacopoeas and Contained in the National Formulary; Chemical and Therapeutical Information as to Mineral Springs of America and Europe, and Comprehensive Lists of Synonyms. By Thomas Lathrope Stedman, A.M., M.D., Editor of the Medical Record. Second, Revised Edition. Illustrated. New York: William Wood & Co., 1912. Pp. XI-1083. (Price, $4.50 plain; $5.00 indexed.)

It is quite a compliment to the author that the fourth edition of his dictionary has been called for within two years. It is, no doubt, a great satisfaction to Dr. Stedman, for his book to have been so well received. In our review of the former edition we gave it our hearty commendation, and we do so again, with good grace, for this new edition is more than a reprint, in fact, it is almost an entirely new work. The few mistakes and errors that have been pointed out by critics, have received due consideration, and in this fourth revision a great deal of new matter has been added which has increased the number of pages from 1028 to 1083.

In this work will be found the deriviation, pronounciaotion, and definition of upwards of 60,000 words. It gives the derivation of all words, (when known) from the Anglo-Saxon as well as from the Latin and Greek. Pronounciation in indicated whenever it is not well evident, and accent marked in all the main titles and most of the subtitles. That improvement may be made in so technical a book as a a medical dictionary is shown by the excellence of this publication, which has just been sent out by the publishers.

This new edition of Stedman's Medical Dictionary is intended to provide a modern up-to-date scholarly and reliable dictionary for physicians and medical students and it pretty thoroughly fulfills the intentions of the editor and publishers. We regret to see the definition given of such simple English words as "absorb, actual, yam and yard," and the more important new works such as "deamination, deminization, trophotherapy and trophodynamics," etc., omitted. The book is bound in strong flexible leather covers. The text is printed on a fine quality of serviceable paper, and the clear, legible type makes the book a comfort to the seeker after knowledge.

We again commend this dictionary to authors, writers, physicians and students of medicine and allied sciencies. The publishers appreciate the unusual value of this work, and as a result hand you a volume in flexible morocco, truly a luxuriant specimen of bookmaking. We congratulate the author and publishers, and look forward with interest to the appearance of the fifth edition.

Geriatrics.—The diseases of old age and their treatment, including Physiological Old Age, Home and Institutional care, and Medico-Legal relations, by I. L. Nascher, M.D., New York, with an introduction by A. Jacobi. 508 pages with 50 full page plates and 81 illustrations. Second edition, revised. Handsome cloth bindings, $5.00 net. P. Blakiston's Son & Company, Philadelphia, Penn. 1916.

Senility is often aptly alluded to as second childhood. A comparison of the organism in childhood with the organism in old age will show that there is not an organ or tissue, not a function, mental or physical, identical at the two periods of life, consequently a work on Old Age appearing at this time is welcomed, since this is the first distinctly American work to appear on the subject. The spirit of veneration of ancestors and the aged, such as exists in China, does not exist among us; and it is with the hops of arousing an interest in Geriatrics that prompted Dr. Nascher to write this book. He trusts that a study of the subject will stimulate research into the causes of senescence and the pathology of senile disease.

Doctor Nascher in arranging his subject matter has deviated somewhat from usual custom and grouped his subject matter into sections rather than chapters, viz., Physiological Old Age, Pathological Old Age,—the latter including Primary Senile Diseases, Secondary Senile diseases, modified diseases of old age, preferential diseases of old age, diseases uninfluenced by old age & etc. There are also extended references to the home care of the aged, institutional care of the aged, medico-legal relations, sexual perversions and Malingerers.

The Author has arranged a wealth of detail contrasting the conditions surrounding childhood and old age, the study of which will prove interesting to most of us, for it really opens up a new line of thought, in new, and almost untrodden fields. It is on this foundation that Dr. Nascher has builded his superstructure and has adorned it with a word picture of the senile state. A most pathetic picture, to be sure, yet we hope its study may in time benefit the poor and neglected in our homes for the aged and infirm. "While the dependence of the child arouses sympathy, in the aged the repugnance aroused by the pitiful though disagreeable facial aspect and the idea of economic worthlessness destroys the sympathy we bestow upon the child and instills a spirit of irritability if not positive enmity against the helplessness of the aged."

The study of the causes of "ageing," or the question why we grow old, or rather why after a period of physical perfection the organs and tissues degenerate and their functions weaken and become unable to maintain the harmonious interrelations necessary for life are forcefully set forth in a masterful section of this work. This section is most ably written and teaches a most serious lesson and deserves most thoughtful and careful study.

It would be impossible to do justice to this work of 500 pages in a short review; we can only mention the more important features of the work. The author's classification is new. Lengthy descriptions are avoided, minute pathology is generally omitted and only the essential symptoms necessary to differentiate clearly one disorder from another are recorded.

We again heartily commend this work, as we did when reviewing the first edition, to all earnest men not only for the wonderful story unfolded, but for its helpfulness, as a guide to the physician, and the humane worker, that the last days of the aged may be made tolerable.

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